IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

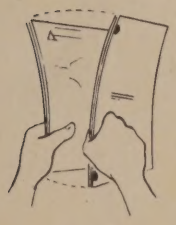
to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***

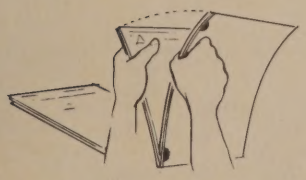
1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.



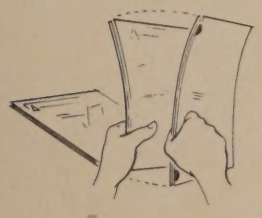
2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.



4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT Servicer

October 15, 1950 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. 11, Nos. 109 & 110

"To keep your friends always give your CANDIED opinions." - (Coal-Getter)

IMPORTANT NOTICE

As this is written, September 14th, 1950, PHOTOFACT Folder Set No. 110, completing our eleventh Volume, has gone to press.

For over four and a half years, the established 160 page minimum content of a set of PHOTOFACT Folders has been maintained. Set after set of Folders has exceeded that minimum by generous margins. For example, PHOTOFACT Sets 91, 93, 95, 97, and 99, with Preliminary Data Supplements, contained 224 pages each. In dozens of other sets, extra page content was frequently included by coverage of a popular record changer, or an AM-FM receiver, or some other instrument in popular demand.

For well over a year, we have been faced with the serious problem of constantly increasing material and labor costs. In spite of this fact, we have persevered in maintaining our $1.50 price per set of Folders.

The conditions of constantly increasing labor and material costs now make necessary a reduction in the established minimum number of pages a set of PHOTOFACT Folders will contain. That minimum is established now, tentatively at 128 pages. We will not go that low unless we are compelled to do so. For example, effective with PHOTOFACT Set No. 111, the page content will number 144. A new arrangement is making it possible to cover equipment effectively in a fewer number of pages. For example, TV folders, formerly requiring 26 pages, now need from 18 to 22 pages, with no loss of clarity or completeness.

Thus by effecting economies in the reduction of number of pages used, and in printing, bindery and other costs, we can continue with our $1.50 price.

Our policy is unchanged: we are determined to give you the most for your money. I pledge to do everything in my power to maintain that policy.

Howard W. Sams

PAGING - - SAMUEL FRANKLIN

We have your request for Folder No. 24 from Set No. 10, covering Philco model 46-350. Your address did not appear on your letter, and the envelope was inadvertently discarded. If you will write giving your address, we will send this Folder to you immediately.

* * *

Interesting Note!

During the period from April 10th through September 12th, PHOTOFACT Sets 87 through 106 - including Preliminary Data - cover 1062 different models, as follows: -

TV PHOTOFACT Folders	353)	717
TV Preliminary Data	364)	
Radio PHOTOFACT Folders . . .	345	
Total	1062	

During that same period - the industry produced 1089 models as follows: -

TV	824
Radios	265
Total	1089

That's good evidence that PHOTOFACT gives you coverage at a rate that keeps pace with the industry's productive capacity.

Aren't you surprised at the number of radios - versus TV - we were!

WE'LL PAY $5.00 FOR YOUR IDEAS ON NEW WAYS TO USE PHOTOFACT FOLDERS

Have you found some novel way of putting your PHOTOFACT Folders to work so you get extra value and help from them? Tell us about it, and if the idea is good enough to pass on to thousands of your fellow PHOTOFACT subscribers, we'll print it in the "Servicer" and send you a crisp $5.00 check. Here are two practical suggestions we've received that were well worth $5.00

"You might be interested in the following procedure which I use with my PHOTOFACT Folders.

"When it is necessary to modify a circuit to overcome a case of trouble, I insert the change in the circuit in pencil and refer to a sub-note. For example, in PHOTOFACT Set No. 4, Folder No. 35, covering Philco 46-1201, I have added in pencil, a 40 MFD capacitor between pins No. 3 and No. 8 of the 50Y6GT tube, designated it with an asterisk (*) and have added a "6" and "7" in pencil, pointing to the printed "6" and "7" respectively, with the following sub-notes:

* - Added to J. Bachman's set to reduce hum, 8-15-50
6 - Changed to 20 MFD in Bachman's set to reduce hum, 8-15-50
7 - Changed to 40 MFD in Bachman's set to reduce hum, 8-15-50
(Changed "6" to 20-40/150 and used for "6" and "7" above. Removed 7.)"

Pierce F. Lohman
3249 Jonestown Road
Harrisburg, Pennsylvania

* * *

"I have found it very helpful to cut out the partial schematics which you print on the envelopes holding the folders.

"I file them as IF, RF, AF or power supply, with a separate file for AM, FM or television.

"I find them a big help and time saver especially in experimental work, or in case I can't locate the schematic of a certain set, and need a diagram of a typical circuit."

H. D. Glenn
Joiner Radio Service
Box 472 El Dorado, Arkansas

Got a hint or kink to match these - some other ingenious way in which YOU use PHOTOFACT Folders? Send in your ideas - they may be worth $5.00 each. Start 'em coming!

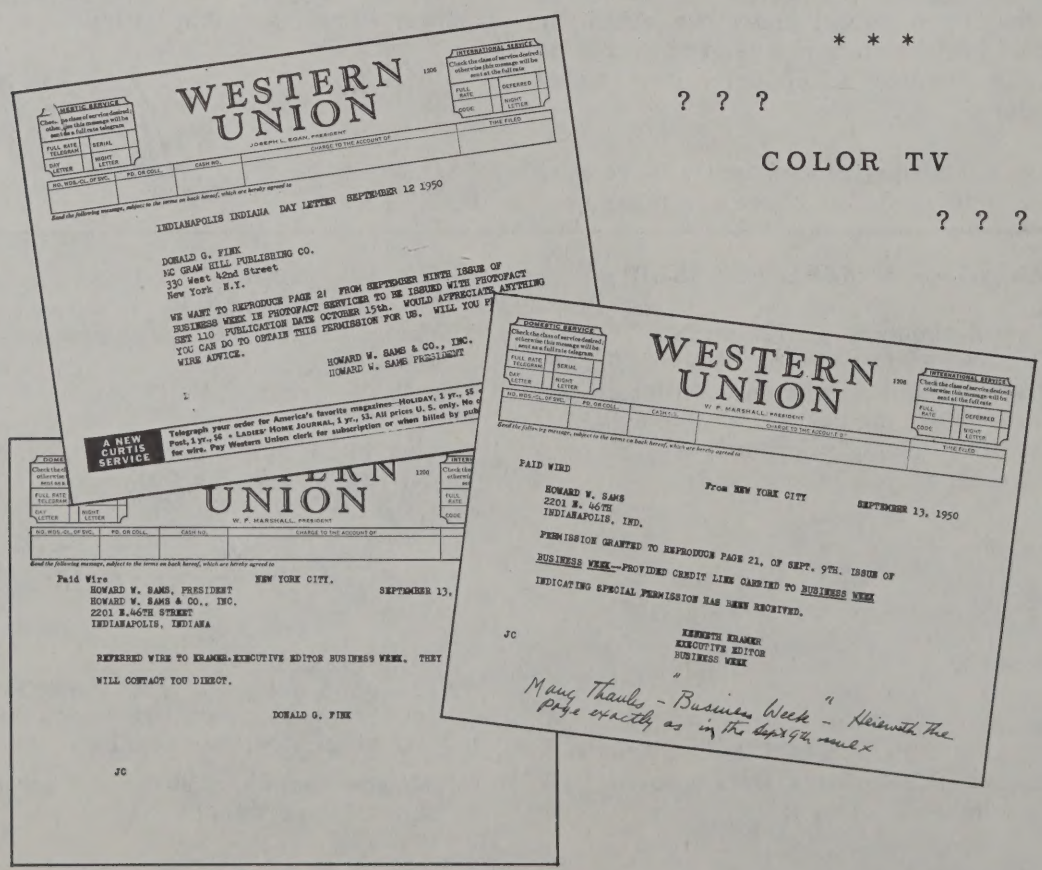
Address your letter to Howard W. Sams, c/o PHOTOFACT Servicer.

* * *

? ? ?

COLOR TV

? ? ?


WESTERN UNION
INDIANAPOLIS INDIANA DAY LETTER SEPTEMBER 12 1950
DONALD G. FINK
MC GRAW HILL PUBLISHING CO.
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New York N.Y.
WE WANT TO REPRODUCE PAGE 21 FROM SEPTEMBER NINTH ISSUE OF BUSINESS WEEK IN PHOTOFACT SERVICER TO BE ISSUED WITH PHOTOFACT SET 110 PUBLICATION DATE OCTOBER 15th. WOULD APPRECIATE ANYTHING YOU CAN DO TO OBTAIN THIS PERMISSION FOR US. WILL YOU
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REFERRED WIRE TO KRAMER, EXECUTIVE EDITOR BUSINESS WEEK. THEY
WILL CONTACT YOU DIRECT.
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JC
WESTERN UNION
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From NEW YORK CITY
SEPTEMBER 13, 1950
HOWARD W. SAMS
2201 E. 46TH
INDIANAPOLIS, IND.
PERMISSION GRANTED TO REPRODUCE PAGE 21, OF SEPT. 9TH. ISSUE OF
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INDICATING SPECIAL PERMISSION HAS BEEN RECEIVED.
JC
KENNETH KRAMER
EXECUTIVE EDITOR
BUSINESS WEEK
Many Thanks - Business Week - Herewith the page exactly as in the Sept 9th issue

CBS PRESIDENT Frank Stanton seems certain victor after long fight as . . .

CBS Gets the Nod on Color TV

Federal Communications Commission's tentative decision comes as shock to industry because system is incompatible. But FCC says it is thinking of future set owners rather than present ones.

The U.S. television industry got the surprise–and shock–of its young life last week. After months and months of hearings on color TV, Federal Communications Commission handed down a tentative decision approving Columbia Broadcasting System's color system.

• **Compatibility**–The industry guessed wrong on whom FCC considered most important–present TV set owners or future owners. Perhaps the biggest flaw in the CBS color system is that it is "incompatible"–not one of the seven-million sets now in the hands of owners can even get the color pictures in black-and-white without an expensive adapter. The reason is that commercial TV has 525 electronic lines on the tube face for every complete "frame" (picture). The CBS color system has only 405 lines per frame, has twice as many frames per second (BW–Apr.1'50,p19).

The two other major contenders in the color fight–RCA and Commercial Television, Inc.–made the most of this barrier at the hearings. Both got color pictures into the 525-line pattern.

"Informed" guesses were that FCC would either (1) choose a compatible system–even though the picture was not the best; (2) send everyone back to the laboratory to bring up something better; or (3) approve all systems, let the public decide.

• **For the Future**–But FCC figured its responsibility to the public somewhat differently. In its announcement, it says that while compatibility is, of course, desirable, it is too high a price to pay for color at this time. It would be only fair to the 40-million future set owners to pick the highest quality color system now.

Almost everyone agrees that the quality and stability of CBS color is higher than any other. To FCC, that was a far weightier factor in the decision than compatibility.

• **Squeeze Play**–Regardless of motive, industry reaction to FCC's announcement so far has been resentful–partly because it thinks that FCC has caught the industry in a squeeze play.

Specifically, FCC has asked the TV set makers if they will agree to make sets which will receive both present black-and-white telecasts and CBS color telecasts in black-and-white. (To get color, the set owner will have to add a color tube or a color wheel at his own expense.) If they do agree to make such sets, the commission will postpone its final decision on color. If they refuse to make such sets, FCC will adopt the CBS color system as final without further delay.

FCC explains its seemingly cavalier approach this way: If enough manufacturers agree to make "a great majority" of receivers with the so-called "bracket standards," then "we will be in a position to postpone a decision." But if they don't agree, "the commission will not feel free to postpone a decision, for every day that passes would aggravate the compatibility problem."

• **Industry Moves**–Early this week, the industry still hadn't recovered enough of its balance to indicate what it would do. Some authorities guessed that it would probably make at least some sort of token promise to meet the FCC request. One reason for this belief is that the FCC announcement is not a final decision. It gives other companies three months to present a system that it feels would be better than that of CBS. Most authorities feel that the chances of a better system coming up by then are pretty slim, and that therefore CBS is in.

• **Driver's Seat**–Meanwhile, CBS is certainly in the driver's seat, at least for the time being. President Frank Stanton says that CBS won't manufacture sets, but will license other manufacturers to produce its color equipment. Already, it has licensed Westinghouse and Bendix to make receivers, International Telephone & Telegraph to make transmitting equipment, and Remington Rand to make equipment for industrial TV equipment. As things stand, CBS can collect a royalty on sets made in accordance with FCC request.

• **Higher Cost**–There's little doubt that sets able to receive both the 525-line frames of present commercial telecasts and the 405-line frames of CBS will cost a lot more than present black-and-white sets. TV set makers, say some industry people, may be reluctant to go into such a deal.

• **When?**–CBS claims that 30 days after it gets a final O.K. from FCC, it will go on the air in New York with 20 hours of color telecasting per week.

There's only one hitch: There won't be any audience.

• **Mobilization**–The biggest problem of all is one which is not in the hands of the FCC, CBS, or the industry. Manufacturers are already asking this question: How can we make more complex sets when we can't get enough materials to make present black-and-white sets? In other words, mobilization might easily make the whole color question purely academic.

Meanwhile, the industry still has no answer on the question it's really most interested in–the freeze on new TV broadcast stations. Next step is the hearings on frequency allocation FCC will start in October. A final decision is at least as far away as next summer.

FIELD EXPERIENCES -

For every "Field Experience" published, we issue a certificate good for one PHOTOFACT Folder Set. Awards are issued at the time of publication. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

TRAV-LER Model 5054
Photofact Set No. 36, Folder No. 26

Complaint: Large amount of audio hum.

Cause: Audio coupling capacitor, Item No. 9, was lying flat against filter capacitor, Item No. 5, picking up excessive hum.

Remedy: Remove audio coupling capacitor as far as possible from filter capacitor.

Jim's Radio & Television
532 West Columbia Street
Marion, Ohio

* * *

ZENITH Model 28T962R, Chassis 28F20
Photofact Set No. 64, Folder No. 15

Complaint: No raster except when first turned on and right after turned off. At times there would be raster but very dim.

Cause: 6300 ohm resistor supplying plate voltage to 6AC7, second video amplifier, open or very high in value.

Remedy: Replace.

Myron B. Maddes, Serviceman
R. W. Schetter
7 North Main Street
Mechanicsburg, Ohio

* * *

HERE'S AN EXAMPLE
OF INFLATION
THAT YOU WILL UNDERSTAND

Our export agent - Ad Auriema, Inc., sent us this proof of an advertisement that appeared in SOUTH CHINA MORNING POST, LTD., Hong Kong.

All we can say is, "WHEW!"

NEW BOOKS FOR

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Photofact Service Data Library Vols. 4, 5, 6 each volume	$128.00
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Post War Audio Amplifiers	32.00
Photofact Television Course	24.00
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1947 Record Changers Manual	35.00
Recording and Reproduction of Sound	40.00
Radio Receiver Tube Replacement Guide	10.00
Radio Industry Red Book	32.00
Television Antennas	10.00
Auto Radio Manuals	40.00
Dial Cord Stringing Guide	8.00
Modern Practical Radio and Television 4 volumes	85.50
Vade Mecum The World's Radio Tubes 1950	30.00
The Radio Amateur's Hand Book 1950	18.00
Radio Hand Book 11th Edition	24.00
Radio Hand Book 12th Edition	24.00
Radio Diagrams 1939-1948 each volume	16.00
Radio Diagrams 1949	20.00
Radio Diagrams 1950 (arriving end August)	20.00
The Radio Amateur's Handbook by Collins	28.00
Radio Data Book	40.00
150 New Radio Diagrams Explained	12.00
Practical Radio and Electronics Course	32.00
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International Radio Tube Encyclopedia	42.00
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Advanced Radio Servicing	24.00
Everybody's Radio Manual	12.00
Radio For The Millions	12.00
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Thermionic Valve Circuits	15.60
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Fundamental Electronics and Vacuum Tubes	48.00
Radio Circuits by Miller	4.40
RCA Receiving Tube Manual	5.00
RCA Tube Hand Book 3 volumes	120.00
Sylvania Radio Tube Manual	8.50
Radio Valve Manual	4.40
Radio Valve Data	4.40
Radio Receiver Servicing and Maintenance	10.60
The Radio Amateur Newcomer	8.00
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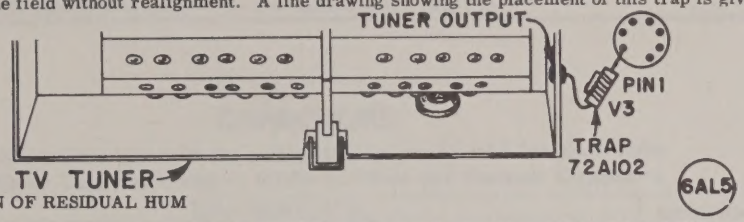
SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 1, SET 100

ADMIRAL CHASSIS 20Z1

Run 7 and higher

In some installations a certain type of interference may be encountered which is caused by an adjacent channel sound carrier on the low frequency side. This is usually more noticeable when the desired station is weaker than the interfering one. This type of interference usually shows up as a herringbone interference pattern which varies along with the modulation of the adjacent sound carrier. Since FM stations and other RF sources can cause the same type interference, the presence of a lower adjacent channel signal should be definitely determined.

The low adjacent sound carrier will produce an IF signal at 27.25MC in this receiver. Proper rejection of this signal will eliminate this interference. In Run 7 and higher a parallel resonant trap fixed tuned to 27.25MC is wired in series with the 1st Video IF Grid. The part number of this trap is 72A102. The trap may be installed in the field without realignment. A line drawing showing the placement of this trap is given below.



REDUCTION OF RESIDUAL HUM

A production change has been made in the 2PA1 power supply chassis used in models 32X26, 32X27, 32X35 and 32X36. The change was made to reduce residual hum (hum with volume control turned full counter-clockwise). If this difficulty is encountered on sets not having this change incorporated, the set may be rewired in the field.

1. Remove the lead that connects pin 4 of V25, audio output tube, to the tap of R116. Remove the lead that connects C73B to the tap of R116.
2. Disconnect the 270K resistor, R113, from the tap of R116 and reconnect to pin 4 of V25. Leave center tap of R116 unconnected.
3. Connect a 22KΩ, 1 watt resistor from C73A to C73B. Connect a lead from C73B to pin 4 of V25.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2, SET 89

AIRLINE MODEL 94BR-3017B

"B" Series

The Airline Model 94BR-3017B is identical to Model 94BR-3017A with the following exceptions.

The IF tubes (V3, V4, V5) are changed to 6AG5.

The junction of R71 and R72 is connected to the junction of R8 and R103.

C109 (See parts list below) is connected between pin 6 of V7 and chassis.

The junction of pin 5 of V15 and R107A is not connected to pin 1 of ballast tube. R107A is 47 ohms.

Below is a parts list showing the new values used in the "B" Series sets.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					
	CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.
C33	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1
C34	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1
C41	330		C-8G-17349	SI330	D6-331	5W5T3	GP2K-330	19C14
C51	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1
C59	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	19C1
C81	.04	1600	B-8D-17699	P1688-04		PTE16S4		MB-S4
C82	.02	1600	B-8D-16578	P1688-02		PTE16S2		MB-S2
C83	.0014	1600	B-8D-16576	P1688-0015				MB-D15
C92	470		C-8F3-241	SI470	D6-471	5W5T5	GP2K-470	19C15
C105	.08	400	C-8D-17555	P488-075		PTE4P1		4TM-P1
C106	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1
C109	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA	
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.
R25	10KΩ	1/2	C-9B1-56	BTS-10K
R28	47Ω	1/2	C-9B1-127	
R33	47Ω	1/2	C-9B1-127	
R34	56KΩ	1/2	C-9B1-83	BTS-56K
R37	47Ω	1/2	C-9B1-127	
R66	1.5 Meg.	1/2	C-9B1-100	BTS-1.5 Meg.
R67	220KΩ	1/2	C-9B1-90	BTS-220K
R69	3 Meg.	1/2	C-9B1-242	
R74	100KΩ	1/2	C-9B1-86	BTS-100K
R84	3.3 Meg.	1/2	C-9B1-104	BTS-3.3 Meg.
R103	2.7 Meg.	1/2	C-9B1-103	BTS-2.7 Meg.
R104	5.6 Meg.	1/2	C-9B1-107	BTS-5.6 Meg.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 4, SET 72

Models 05WG-3016A and B, 94WG-3016A and B are identical to model 94WG-3008A except for the use of a 12 1/2 inch picture tube 12KP4, and a few minor changes in the video amplifier and sync separator circuits. The alignment procedure, disassembly instructions and horizontal oscillator and linearity adjustments for these models are the same as those given in the Photofact folder covering the 94WG-3008A.

A partial schematic and parts list are given below showing the new wiring and the changes in part values and part numbers. (See page 2 for partial schematic diagram)

Model 94WG-3016C is a model 94WG-3008A converted by a field modification to use a 12 1/2 inch picture tube. In this model a .05MFD, 400V capacitor is connected across the width coil L18. Also R74 is changed to 2200Ω, 1 watt, and is connected to the 265V B+ line instead of the 225V line.

AIRLINE MODELS
05WG-3016A, B, 94WG-3016A, B, C

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C52	Not Used								
C53	Not Used								
C54	Not Used								
C151	.1	400	D66104	P488-1	DF-104	PTE4P1		4TM-1	Video Coupling
C152	270	1000	47X534	1469-HV-00025					Hor. Sweep Coup. **
C153	20			SI20	D6-200	5W5Q2	GP1K-20	19C23	Sync. Amp. Plate Byp.

** Connected in parallel with C69.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
R26	Not Used *				
R27	Not Used *				
R44	Not Used				
R45	3900Ω	1/2	B84392	BTS-3900	Video Amp. Plate †
R46	470Ω	1/2	B84471	BTS-470	Video Amp. Plate †
R47	22KΩ	1/2	B85223	BTS-22K	Voltage Divider
R60	Not Used				
R61	Not Used				
R62	Not Used				
R63	Not Used				
R151	470KΩ	1/2	B85474	BTS-470K	Voltage Divider
R152	10KΩ	1	B84103	BTA-10K	Current Limiting
R153	2.2 Meg.	1/2	B85225	BTS-2.2 Meg.	Voltage Divider
R154	1.5 Meg.	1/2	B84155	BTS-1.5 Meg.	Sync. Sep. Plate
R155	47KΩ	1/2	B84473	BTS-47K	Sync. Sep. Grid
R156	2200Ω	1/2	B85222	BTS-2200	Sync. Sep. Cathode
R157	10KΩ	1/2	B85103	BTS-10K	Sync. Sep. Plate

* After R26 and R27 are removed, pin 6 of V12 is connected to the arm of the contrast control.
† The line feeding of the sync amp V13 is removed from the junction of R45 and R46 and connected to the grid of the picture tube.

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Tuner	S-25A3	Complete
	Screen Escutcheon	4X1047	
	Rubber Strip and Bracket Assembly	S-25X38	
	Support Bracket	25X1630	

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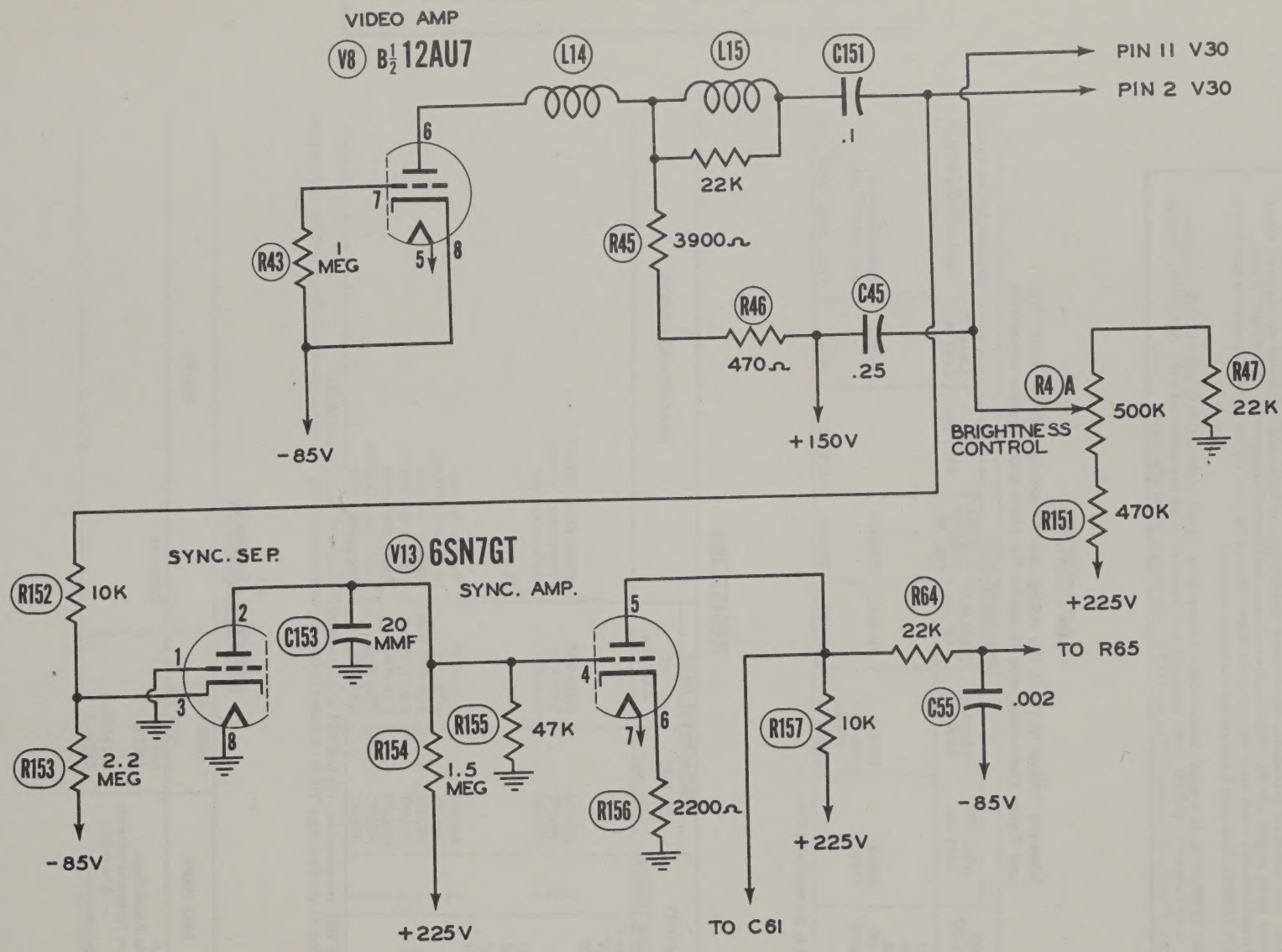

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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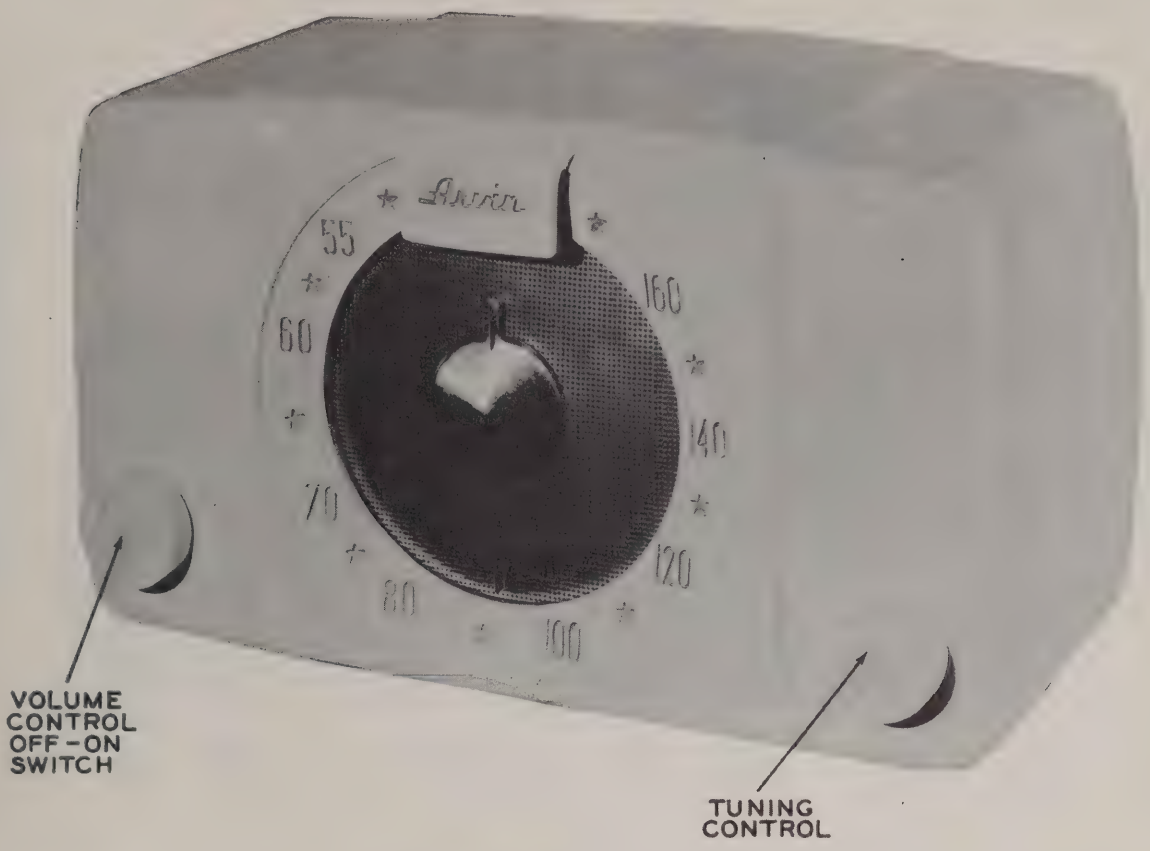
ARVIN
MODELS 450T, 451T (Ch. RE-281)



ARVIN
MODELS 450T, 451T (Ch. RE-281)

ARVIN MODEL 450T

TRADE NAME	Arvin, Models 450T, 451T (Ch. RE-281)
MANUFACTURER	Arvin Industries Inc., Columbus, Indiana
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET-AVC-AF, 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-DC — RATING .25 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to last reference mark on low frequency end of dial.

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (Grid) of 12BE6 (V1). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	.05MFD	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune for max. output	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

ARVIN MODEL 450T

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	150	C23470	PRS150/40-20-20		EDL42215		TVA-3448	Filter-Red
B	40	150							Filter-Blue
C	20	150							Filter-Green
C2	.0005	1000	C20069-501	1468-0005	D6-501	5W5T5	GP2K-500	6TM-T5	Ext. Ant. Isolation
C3	.05	200	C20067-503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C4	250	500	C20065-251	1468-00025	D6-251	5W5T25	GP2K-250	1FM-325	Diode RF Filter
C5	.01	400	C20068-103	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C6	.01	400	C20068-103	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C7	.0005	1000	C20069-501	1468-0005	D6-501	5W5T5	GP2K-500	6TM-T5	Tone Compensation
C8	.05	200	C20067-503	P288-05	DF-503	PTE4S5		2TM-S5	Tone Compensation
C9	.01	400	C20068-103	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Output Plate Byp.
C10	.05	400	C20068-503	P488-05	DF-503	PTE4S5		72P51	Line Isolation
C11	.05	400	C20068-503	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

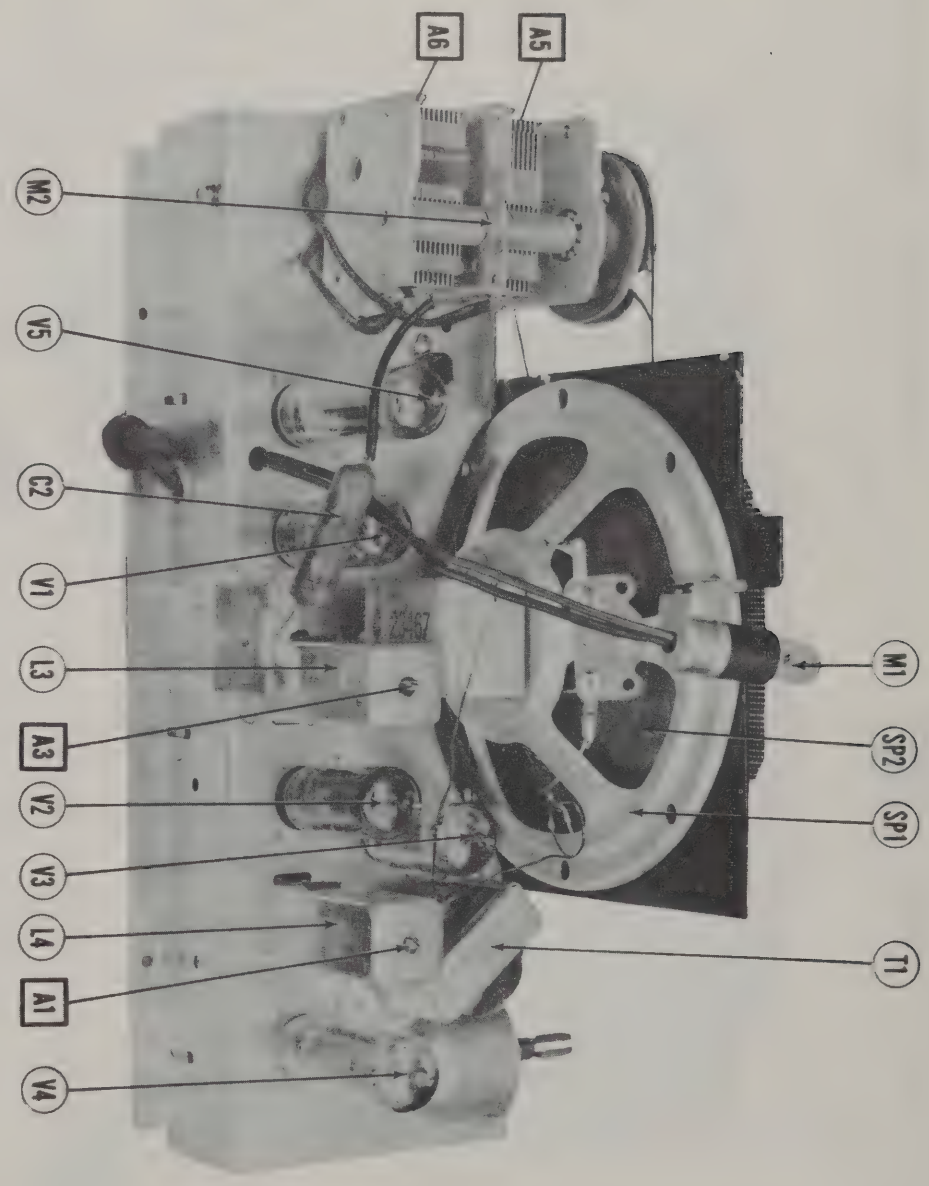
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	C23468	Q13-137	AG-63-Z	BSK-70-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	C20060-223	BTS-22K	Osc. Grid
R3	2.2 Meg.	½	C20060-225	BTS-2.2 Meg.	AVC Network
R4	47Ω	½	C20060-470	BW-½-47	IF Cathode
R5	4.7 Meg.	½	C20060-475	BTS-4.7 Meg.	AF Grid
R6	470KΩ	½	C20060-474	BTS-470K	AF Plate
R7	470KΩ	½	C20060-474	BTS-470K	Output Grid
R8	120Ω	½	C20120-121	BTS-120	Output Cathode
R9	2200Ω	½	C20060-222	BTS-2200	Tone Compensation
R10	470Ω	½	C20060-471	BTS-470	Tone Compensation
R11	1200Ω	1	C20070-122	BTA-1200	Filter
R12	120Ω	1	C20070-121	BTA-120	Filter
R13	15Ω	½	C20060-150		Surge Limiter
R14	150Ω	½	C20060-151	BTS-150	Pilot Light Shunt
R15	330KΩ	½	C20060-334	BTS-330K	Line Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2500Ω	3.7Ω	185Ω	.6Ω	AC-23464-1	A-3332	A-3025	RO-2 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARVIN PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-105		
SP1	PM	3.7Ω	C-23467	MOD. P5-X	5A07	
	CONE DIA.	V. C. DIA.				
SP2	5"	9/16"				

R F COILS

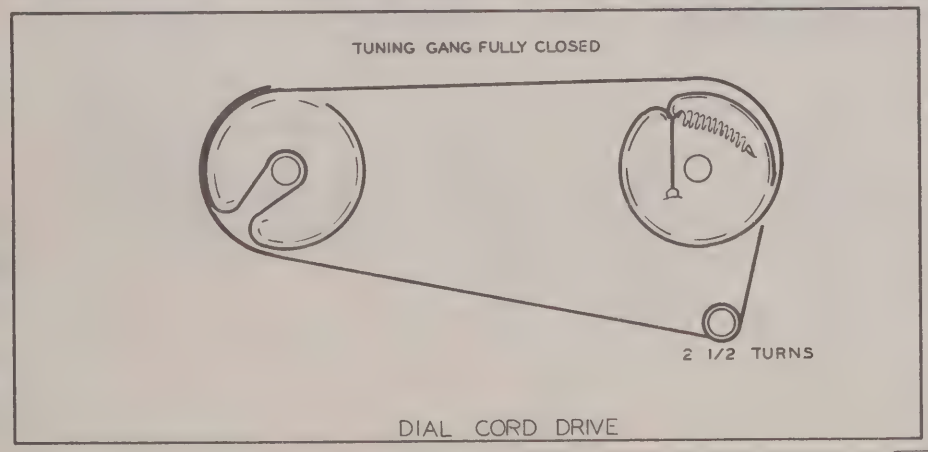
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.	
L1	Loop Ant.	.1Ω	1.4Ω	D23465		Includes rear cover
L2	Osc. Coil	.6Ω	6.5Ω	AC22865-1	14-1073	
L3	1st IF	17Ω	15Ω	C21797-16	16-6758	
L4	2nd IF	15Ω	17Ω	C21797-16	16-6758	

DIAL LIGHTS

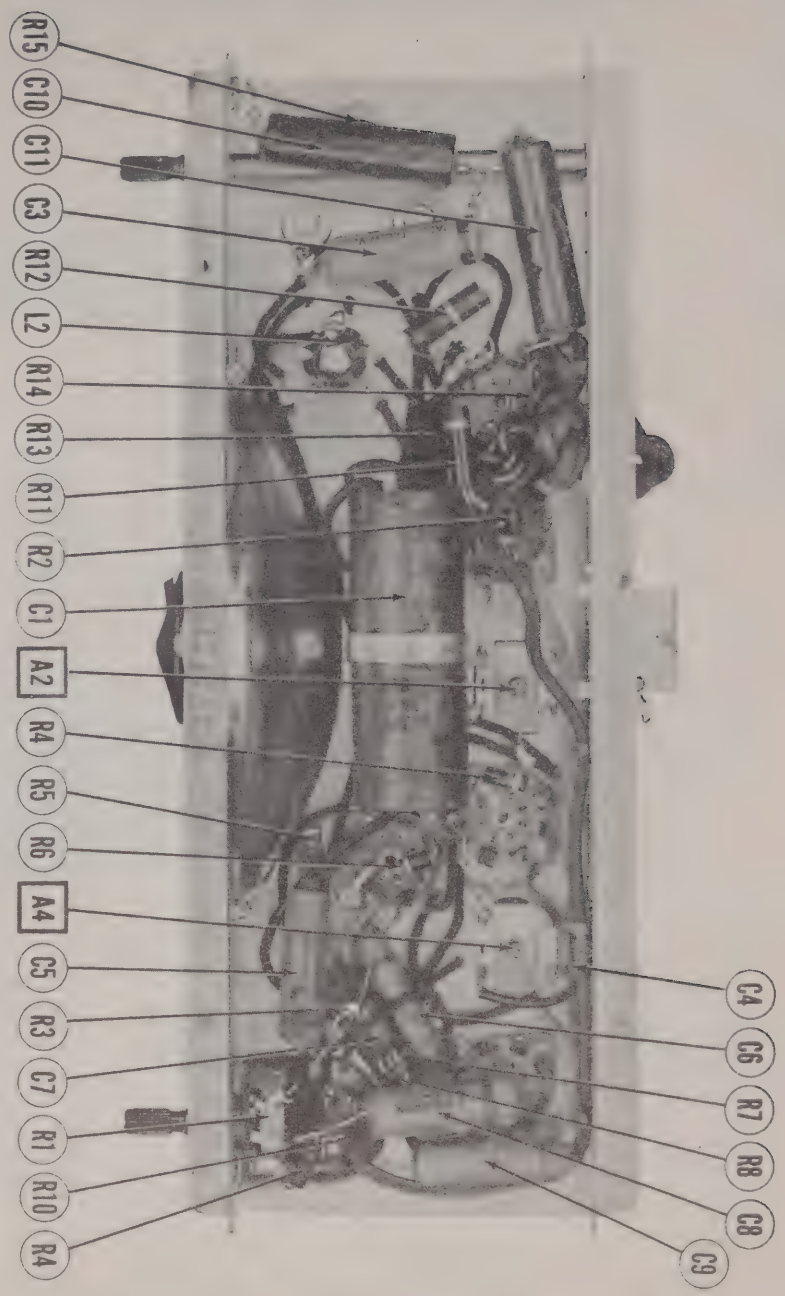
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ARVIN PART No.		
M1	Bayonet	6-8	.15	Brown	A19351		Type #47

MISCELLANEOUS

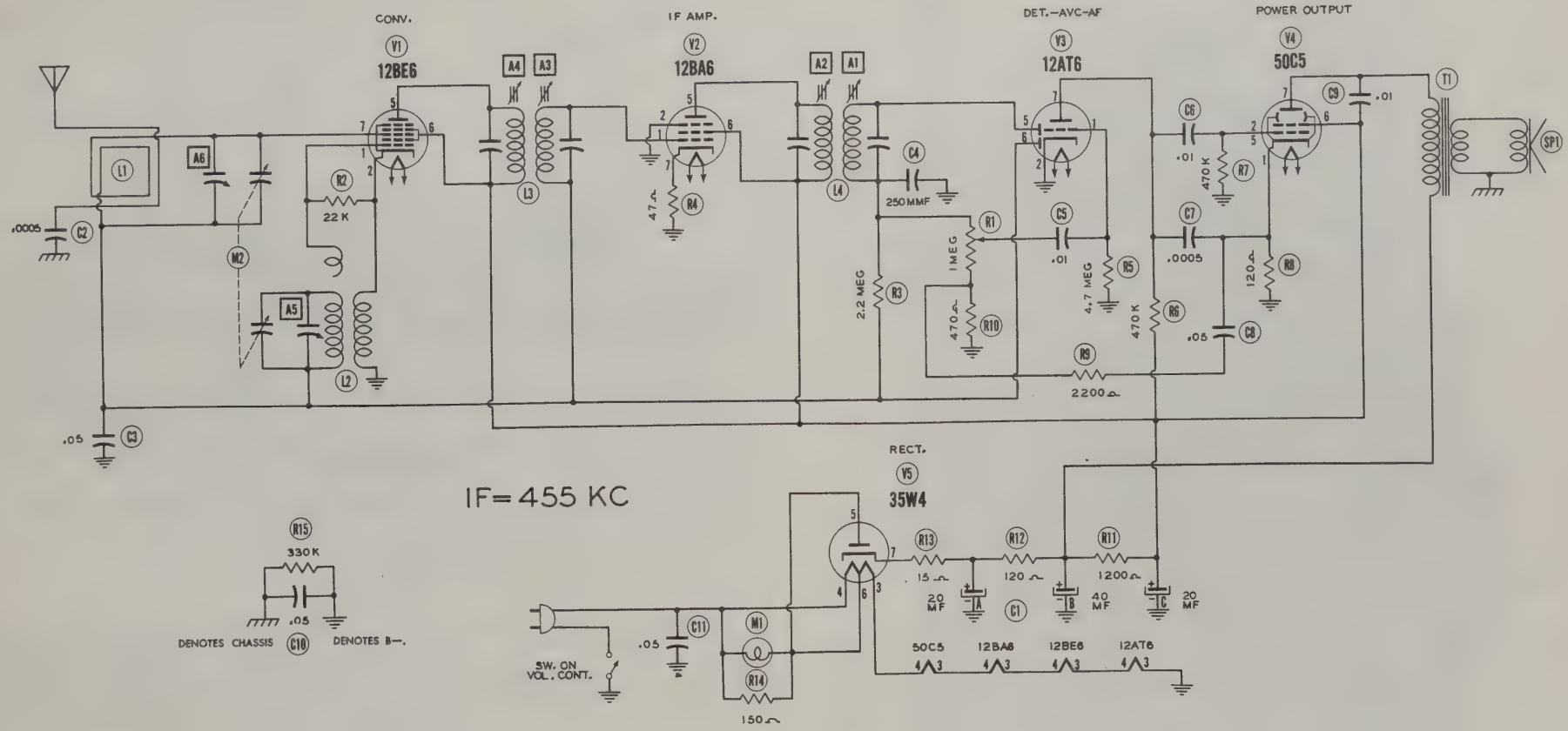
ITEM No.	PART NAME	ARVIN PART No.	NOTES
M2	2 Gang Var. Cap.	C23469	(52-497MMF, 57-232MMF)
	Dial Pointer	C23461	
	Knob	A23453-1	Clear
	Knob	A23453-2	Ivory



CHASSIS—BOTTOM VIEW



ARVIN MODEL 450T



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-4.9VDC	0V.	12VAC	24VAC	80VDC	80VDC	-.4VDC
V 2	12BA6	-.4VDC	0V.	25VAC	36VAC	80VDC	80VDC	.4VDC
V 3	12AT6	-.6VDC	0V.	0V.	12VAC	-.4VDC	-.4VDC	35VDC
V 4	50C5	5.3VDC	.2VDC	36VAC	85VAC	.2VDC	80VDC	100VDC
V 5	35W4	115VDC	108VDC	85VAC	117VAC	115VAC	115VAC	115VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	12Ω	25Ω	†1.3KΩ	†1.3KΩ	3.2 Meg.
V 2	12BA6	3.2 Meg.	0Ω	25Ω	36Ω	†1.3KΩ	†1.3KΩ	47Ω
V 3	12AT6	4.7 Meg.	0Ω	0Ω	12Ω	1 Meg.	3.2 Meg.	†470KΩ
V 4	50C5	120Ω	470KΩ	36Ω	85Ω	470KΩ	†1.3KΩ	†320Ω
V 5	35W4	†15Ω	†135Ω	85Ω	120Ω	115Ω	115Ω	75KΩ

† MEASURED FROM PIN 7 OF V5.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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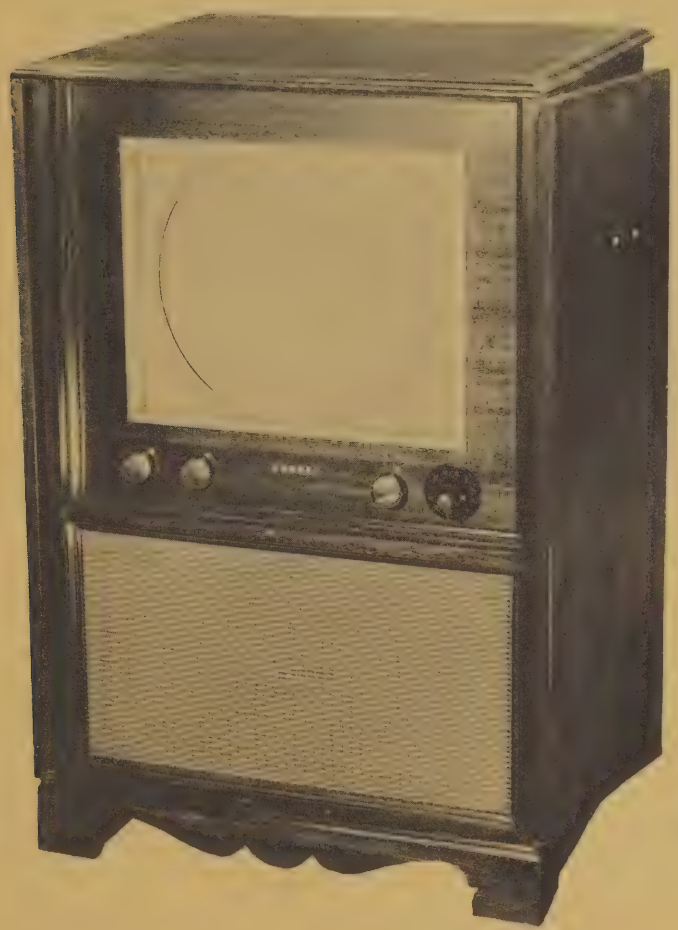

MODEL 36

CONRAC MODELS
36, 39

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Date 10/50 Set No. 110—Folder No. 4

CONRAC
MODELS 36, 39

CONRAC MODEL 36

TRADE NAME	Conrac, Models 36, 39
MANUFACTURER	Conrac Inc., 649 W. Foothill Blvd., Glendora, California
TYPE SET	Television Receiver
TUBES	Twenty Five
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	2.4 Amp. at 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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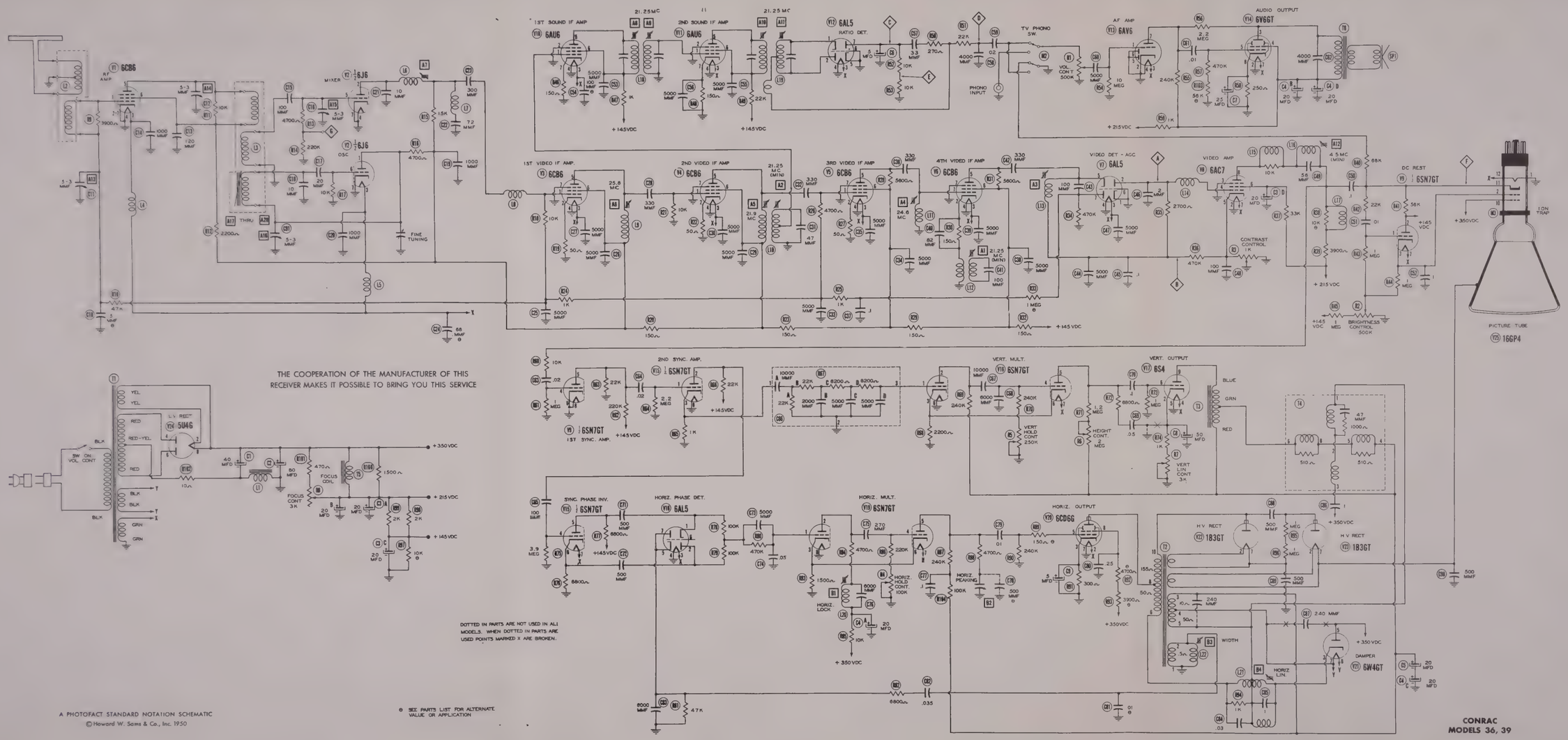

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Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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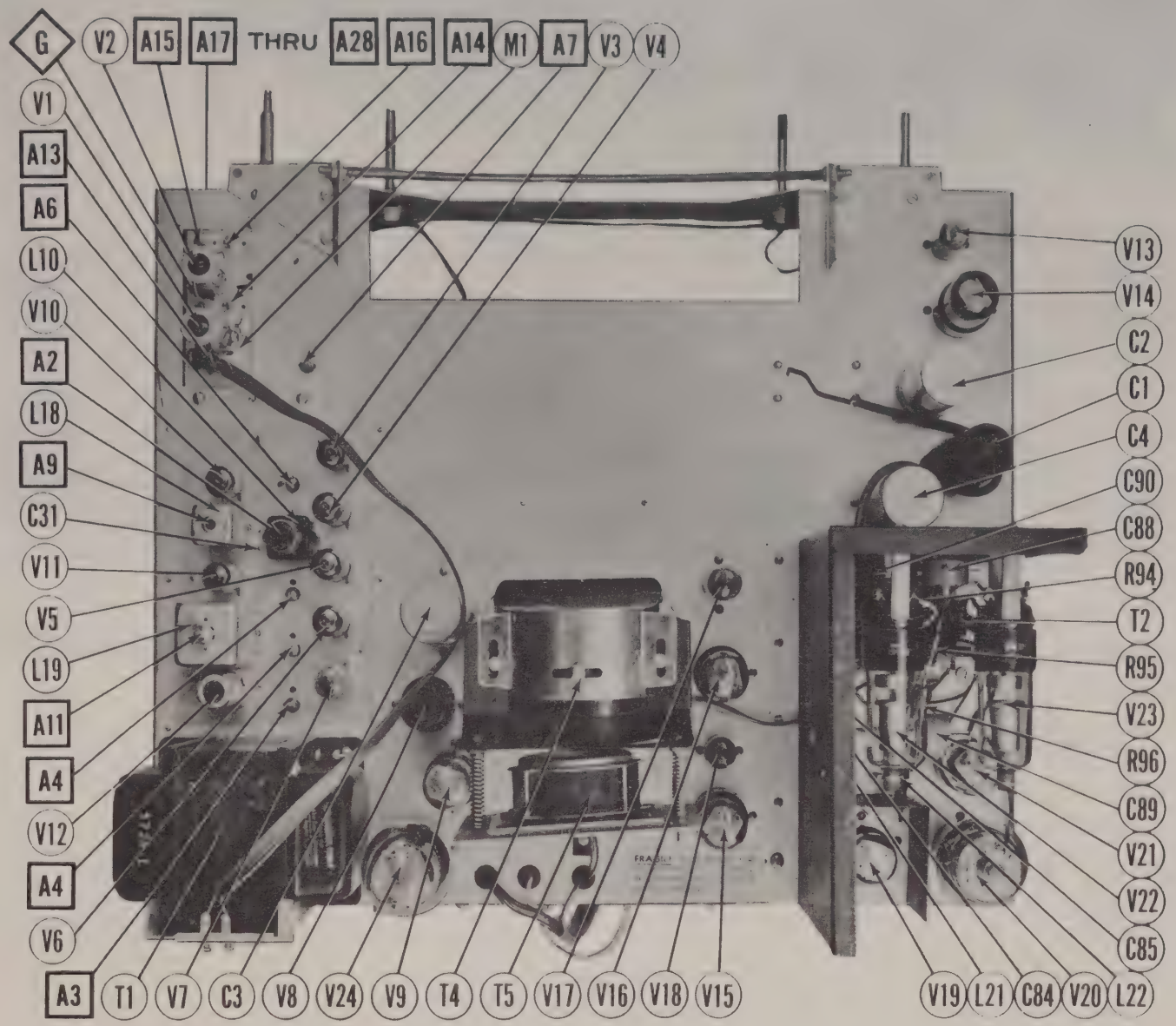
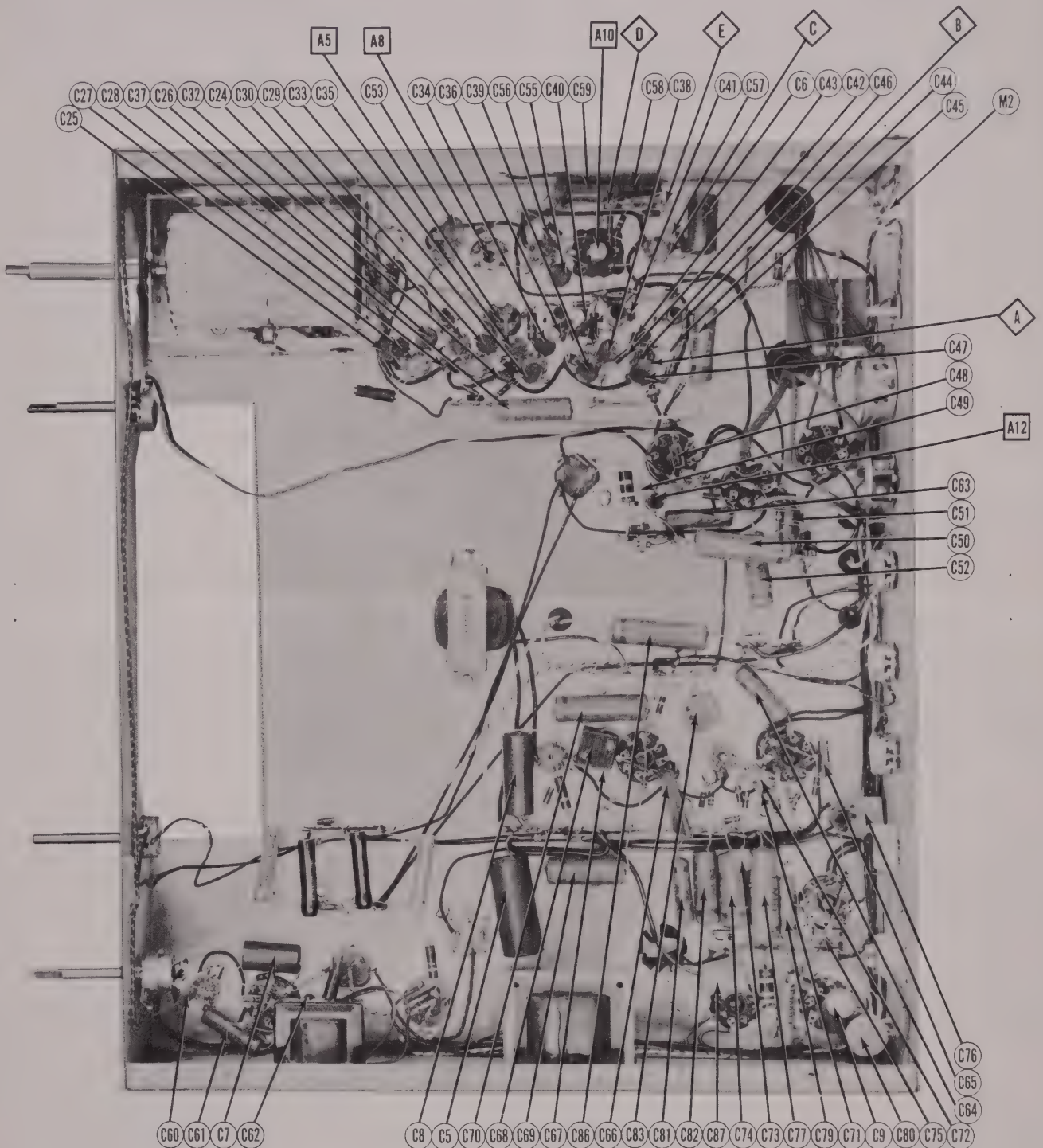
CONRAC
MODELS 36, 39

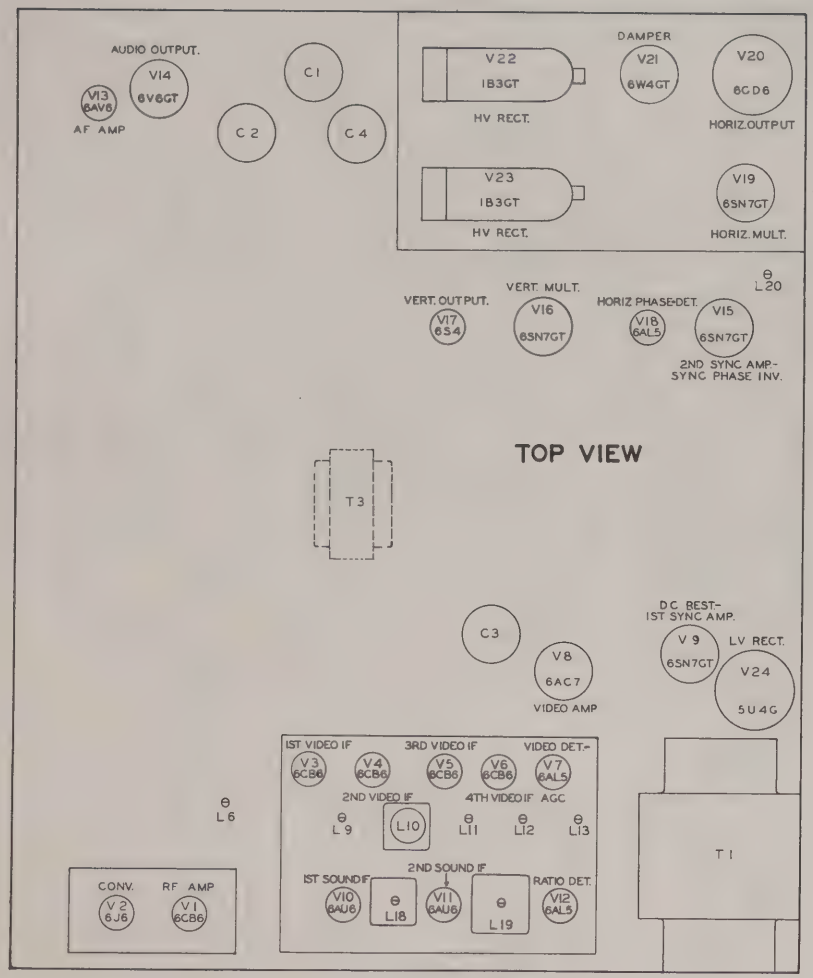
CONRAC
MODELS 36, 39

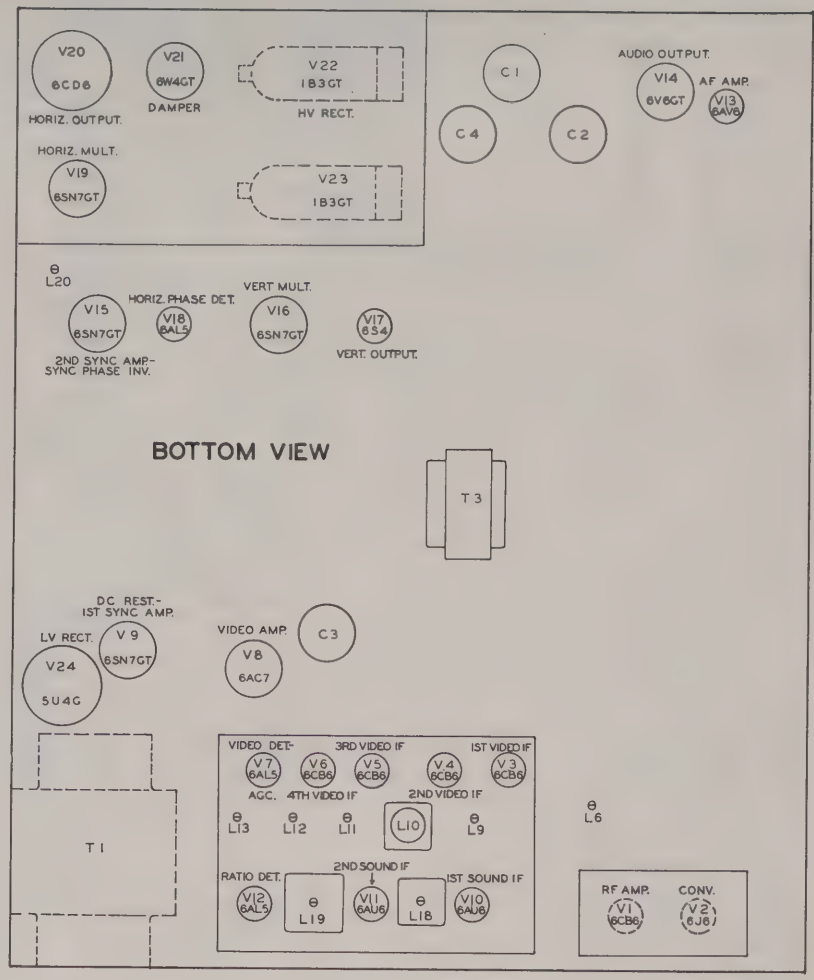


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

CONRAC
MODELS 36, 39

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate the high voltage shock hazard remove the horizontal output tube (V20) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indications.
Connect the negative terminal of a 3 volt battery to the junction of R24 and R25 and the positive terminal to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	Not used	21.25MC (Unmod.)	Any	Use VTVM. DC Probe to Point (A). Common to Point (B).	A1, A2	Adjust for MINIMUM deflection.
2.	Direct	"	"	22.4MC	"	"	A3	Adjust for maximum deflection.
3.	Direct	"	"	24.6MC	"	"	A4	"
4.	Direct	"	"	21.9MC	"	"	A5	"
5.	Direct	"	"	25.8MC	"	"	A6	"
6.	Direct	"	23.5MC (10MC SWP)	21.25MC 22.25MC 25.75MC	"	Vert. Amp. to Point (A). Low side to Point (B)	A7	Adjust A7 for correct width and shape of response similar to one shown in figure 1 with markers as shown. The 22.25MC and 25.75MC markers should be at 50% response. If necessary, slightly retouch A3 thru A6 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (Grid) of 6CB6 (V4). Low side to chassis.	21.25MC (Unmod.)	Any	DC Probe to Point (C). Common to chassis.	A8, A9, A10	Adjust for maximum deflection.
8.	.01MFD	"	"	"	DC Probe to Point (D). Common to Point (E).	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (Grid) of 6CB6 (V4). Low side to chassis.	21.25MC (450KC SWP)	21.25MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A8, A9, A10	Disconnect stablizer capacitor C6. Adjust for maximum amplitude and symmetry as per figure 2.
8.	.01MFD	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A11	Reconnect capacitor C6. Adjust A-11 to place 21.25MC at center of crossover lines as per figure 3. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe thru detector probe as shown in figure 4 to Point (F). Common to chassis.	A12	Adjust for MINIMUM deflection.

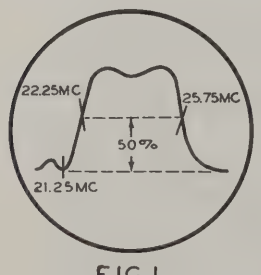


FIG.1

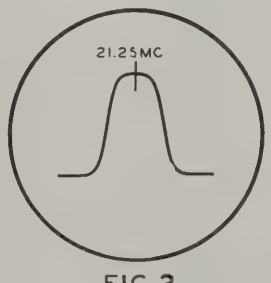


FIG.2

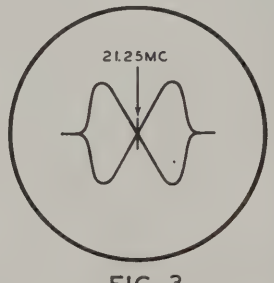


FIG. 3

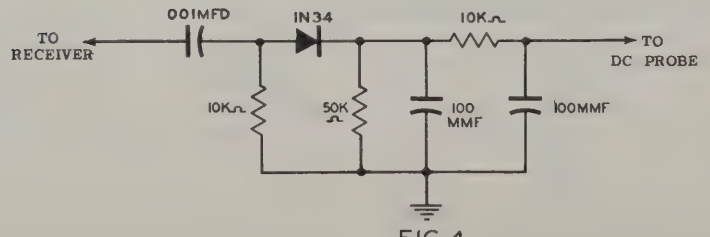


FIG.4

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point Ⓖ. Low side to chassis.	A13, A14, A15	Adjust for flat topped response curve similar to figure 5 with markers appearing not less than 70% of maximum amplitude of the curve.
11.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check response on all channels. A slight adjustment of A12, A13 and A14 may be necessary to obtain optimum results.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace original 6J6 in its socket.
The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Complete alignment of the oscillator circuit may not be necessary. This is determined by checking to see that a zero reading is obtained for each channel when the fine tuning control is tuned through the mid-point of its range. (Connect signal generator and VTVM as in step 12 and 13. Sound carrier frequencies are listed in step 13.) If the majority of the channels seem to need oscillator alignment, this sometimes may be done in one operation-step 12 by using A16. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for individual channels. If step 12 fails to align the oscillator circuits sufficiently, it will be necessary to adjust the oscillator coil slugs. These are accessible through a hole to the right of the channel selector switch shaft as the channel selector is set to each channel.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	209.75MC (Unmod.)	12	DC Probe to Point Ⓓ. Common to Point Ⓔ.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Rotate channel selector switch and adjust individual channels outlined in step 13. Then repeat step 12.
13.	"	"	215.75MC	13	"	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A18	
			203.75MC	11		A19	
			197.75MC	10		A20	
			191.75MC	9		A21	
			185.75MC	8		A22	
			179.75MC	7		A23	
			87.75MC	6		A24	
			81.75MC	5		A25	
			71.75MC	4		A26	
			65.75MC	3		A27	
			59.75MC	2		A28	

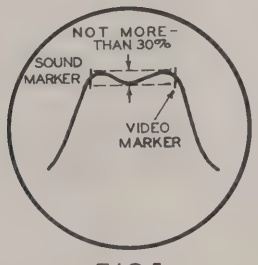


FIG.5

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.8VDC	0V.	6.3VAC	0V.	95VDC	95VDC	0V.		
V 2	6J6	75VDC	60VDC	6.3VAC	0V.	-1VDC	§-2.2VDC	0V.		
V 3	6CB6	-2.4VDC	.2VDC	6.3VAC	0V.	105VDC	120VDC	0V.		
V 4	6CB6	0V.	.8VDC	6.3VAC	0V.	105VDC	120VDC	0V.		
V 5	6CB6	-.4VDC	.2VDC	6.3VAC	0V.	65VDC	130VDC	0V.		
V 6	6CB6	0V.	1.7VDC	6.3VAC	0V.	80VDC	135VDC	0V.		
V 7	6AL5	0V.	1.7VDC	6.3VAC	0V.	1.4VDC	0V.	-1.7VDC		
V 8	6AC7	0V.	0V.	0V.	1.7VDC	12VDC	120VDC	6.3VAC	180VDC	
V 9	6SN7GT	0V.	140VDC	1VDC	-1VDC	12VDC	0V.	6.3VAC	0V.	
V 10	6AU6	0V.	0V.	6.3VAC	0V.	130VDC	130VDC	1VDC		
V 11	6AU6	0V.	0V.	6.3VAC	0V.	55VDC	55VDC	.6VDC		
V 12	6AL5	-.3VDC	-.3VDC	6.3VAC	0V.	0V.	0V.	-.8VDC		
V 13	6AV6	-.6VDC	0V.	6.3VAC	0V.	0V.	0V.	75VDC		
V 14	6V6GT	0V.	0V.	155VDC	175VDC	0V.	0V.	6.3VAC	8VDC	
V 15	6SN7GT	0V.	75VDC	2.6VDC	0V.	135VDC	5VDC	6.3VAC	0V.	
V 16	6SN7GT	0V.	85VDC	3.5VDC	-7.6VDC -9.4VDC	105VDC 65VDC	3.5VDC	6.3VAC	0V.	
V 17	6S4	0V.	40VDC 20VDC	.1VDC	6.3VAC	0V.	.1VDC	40VDC 20VDC	0V.	460VDC
V 18	6AL5	7.6VDC	-7.6VDC	6.3VAC	0V.	0V.	0V.	0V.		
V 19	6SN7GT	.3VDC	255VDC	10VDC	-4VDC -7VDC	140VDC	10VDC	6.3VAC	0V.	
V 20	6CD6G	0V.	6.3VAC	32VDC	0V.	-.2VDC	0V.	0V.	175VDC	TOP CAP *
V 21	6W4GT	0V.	0V.	480VDC	0V.	350VDC	0V.	*	*	
V 22	1B3GT	* DO NOT MEASURE.								
V 23	1B3GT	* DO NOT MEASURE.								
V 24	5U4G	0V.	350VDC	0V.	360VAC	0V.	360VAC	0V.	350VDC	
V 25	16GP4	0V.	9VDC	PIN 10 350VDC	PIN 11 80VDC	PIN 12 6.3VAC				

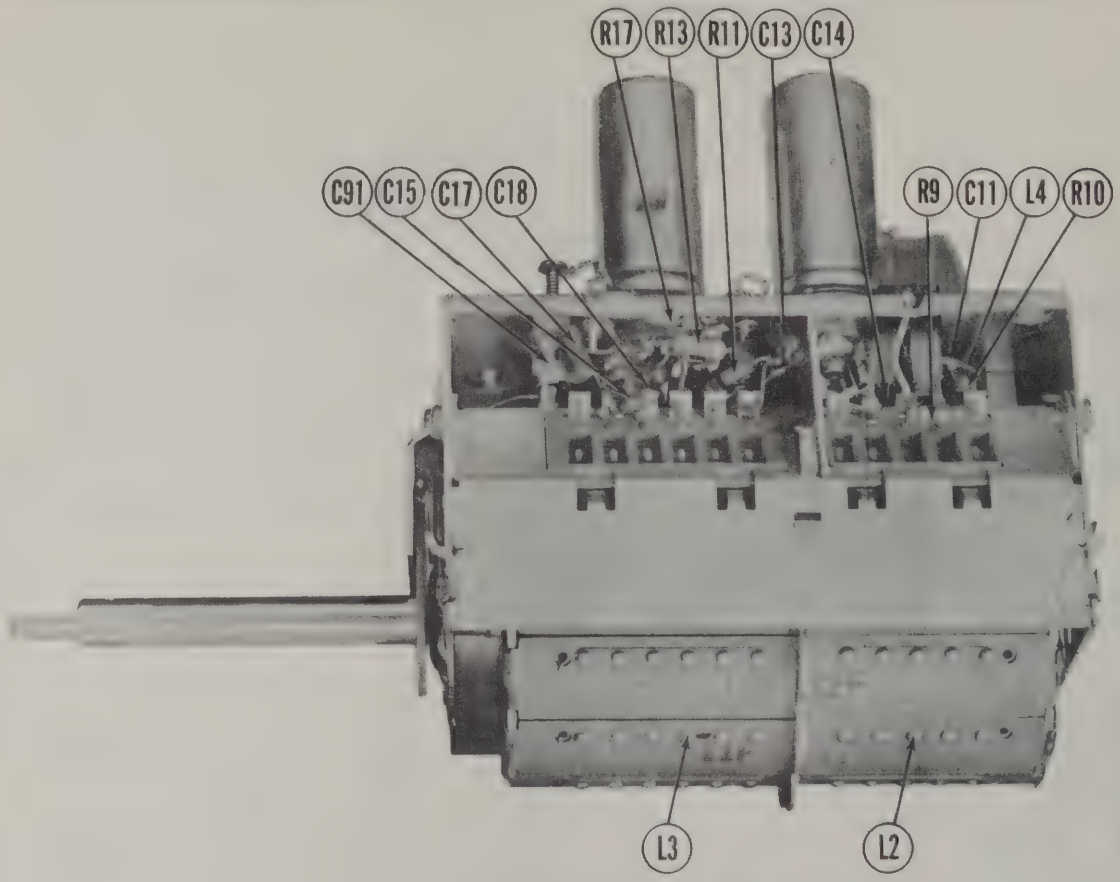
TV-PHONO SWITCH IN "TV" POSITION.
FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.

RESISTANCE READINGS

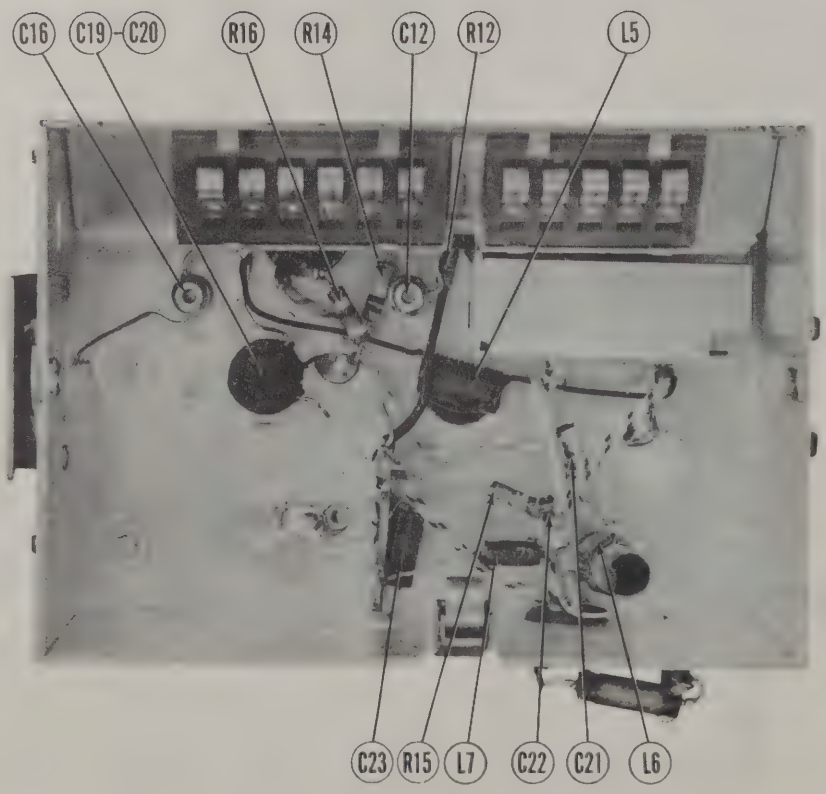
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1.7 Meg.	0Ω	.1Ω	0Ω	†4.8KΩ	†4.8KΩ	0Ω		
V 2	6J6	†7.3KΩ	†18KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6CB6	1.7 Meg.	50Ω	.1Ω	0Ω	†2.6KΩ	†2.6KΩ	0Ω		
V 4	6CB6	10KΩ	50Ω	.1Ω	0Ω	†2.5KΩ	†2.5KΩ	0Ω		
V 5	6CB6	1.7 Meg.	50Ω	.1Ω	0Ω	†8KΩ	†2.3KΩ	0Ω		
V 6	6CB6	.6Ω	150Ω	.1Ω	0Ω	†7.7KΩ	†2.1KΩ	0Ω		
V 7	6AL5	0Ω	470KΩ	.1Ω	0Ω	470KΩ	0Ω	470KΩ		
V 8	6AC7	0Ω	0Ω	0Ω	470KΩ	1000Ω	†34KΩ	.1Ω	†5KΩ	
V 9	6SN7GT	1 Meg.	†2KΩ	1 Meg.	1 Meg.	†225KΩ	0Ω	.1Ω	0Ω	
V 10	6AU6	0Ω	0Ω	.1Ω	0Ω	†3KΩ	†3KΩ	150Ω		
V 11	6AU6	.1Ω	0Ω	.1Ω	0Ω	†24KΩ	†24KΩ	150Ω		
V 12	6AL5	Inf.	Inf.	.1Ω	0Ω	0Ω	0Ω	20KΩ		
V 13	6AV6	10 Meg.	0Ω	.1Ω	0Ω	0Ω	0Ω	†240KΩ		
V 14	6V6GT	0Ω	0Ω	†2.5KΩ	†2KΩ	525KΩ	56KΩ	.1Ω	250Ω	
V 15	§SN7GT	2.2 Meg.	†24KΩ	1000Ω	3.9 Meg.	†9KΩ	6.8KΩ	.1Ω	0Ω	
V 16	6SN7GT	60KΩ	#240KΩ	2.2KΩ	240KΩ 490KΩ	#1.2 Meg. #3.2 Meg.	2.2KΩ	.1Ω	0Ω	
V 17	6S4	Inf.	4000Ω 1000Ω	1 Meg.	.1Ω	0Ω	1 Meg.	4000Ω 1000Ω	Inf.	#1.3KΩ
V 18	6AL5	Inf.	Inf.	.1Ω	0Ω	47KΩ	Inf.	47KΩ		
V 19	6SN7GT	Inf.	†15KΩ	1.5KΩ	220KΩ 320KΩ	#340KΩ	1.5KΩ	.1Ω	0Ω	
V 20	6CD6G	Inf.	.1Ω	300Ω	Inf.	240KΩ	Inf.	0Ω	†9KΩ	TOP CAP #50Ω
V 21	6W4GT	Inf.	Inf.	10 Meg.	Inf.	†0Ω	Inf.	#11Ω	#11Ω	
V 22	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #200Ω
V 23	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP Inf.
V 24	5U4G	Inf.	11KΩ	Inf.	140Ω	Inf.	140Ω	Inf.	11KΩ	
V 25	16GP4	0Ω	1 Meg.	PIN 10 †0Ω	PIN 11 35KΩ	PIN 12 .1Ω				

TV-PHONO SWITCH IN "TV" POSITION.
FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
† MEASURED FROM PIN 8 OF V24.
# MEASURED FROM PIN 3 OF V21.

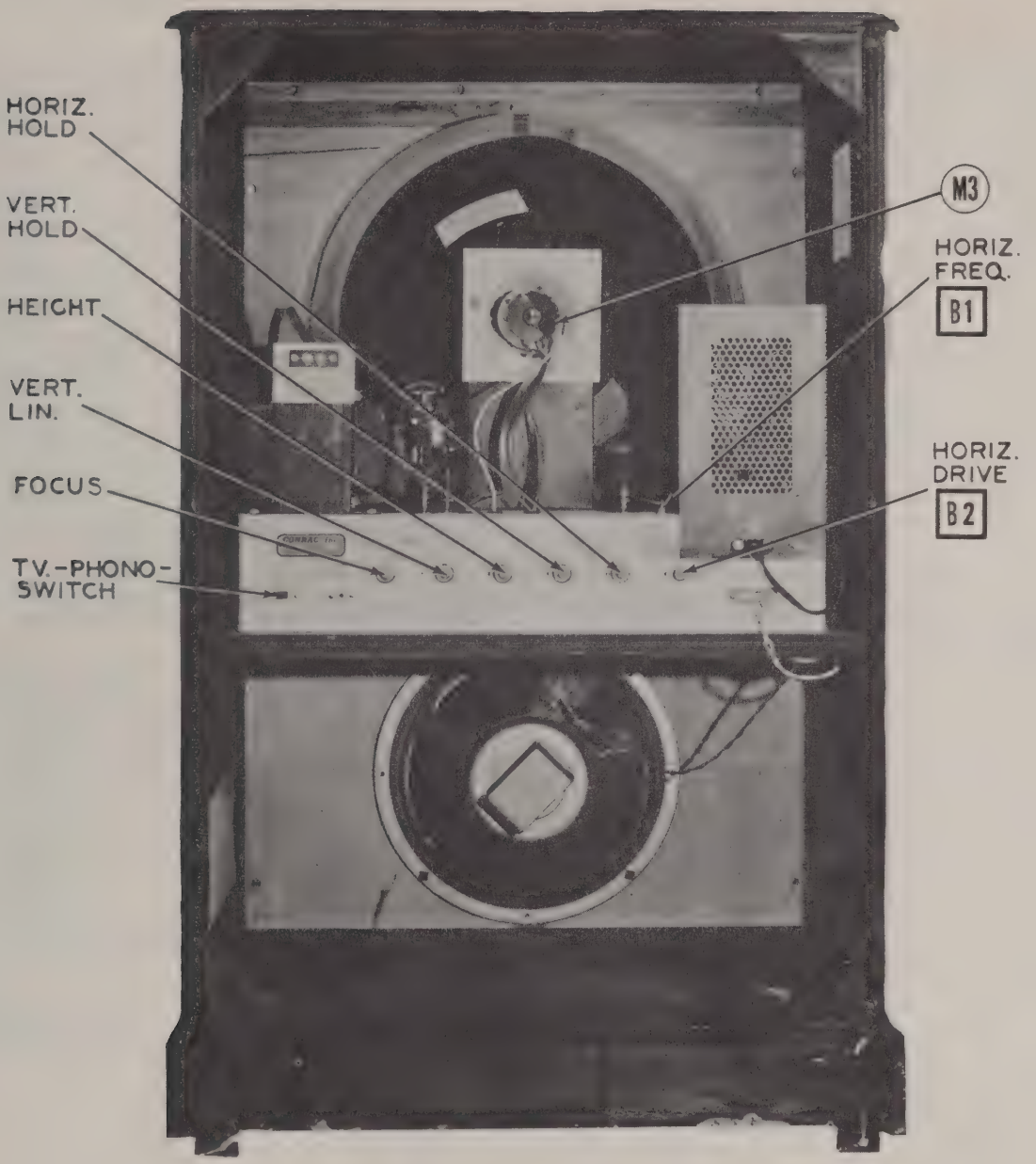
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET- REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn set on and tune in a TV station preferably a test pattern.

Turn the horizontal hold control to mid-position of its range and adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

Turn the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right side of the picture.

Adjust the width slug (B3) until the picture fills the mask horizontally. Adjust the horizontal linearity slug (B4) for best linearity from left to right. A slight readjustment of B2 may be necessary for optimum results.

PARTS LIST AND DESCRIPTIONS (Continued)

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: CONRAC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6CB6	6CB6	6CK	
V2	Converter	6J8	6J8	7BF	
V3	1st Video IF	6CB6	6CB6	6CK	
V4	2nd Video IF	6CB6	6CB6	6CK	
V5	3rd Video IF	6CB6	6CB6	6CK	
V6	4th Video IF	6CB6	6CB6	6CK	
V7	Video Det. -AGC	6AL5	6AL5	6BT	
V8	Video Amp.	6AC7	6AC7	8N	
V9	DC Rest. -1st Sync. Amp.	6SN7	6SN7	8BD	
V10	1st Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd Sound IF	6AU6	6AU6	7BK	
V12	Ratio Det.	6AL5	6AL5	6BT	
V13	AF Amp.	6AV6	6AV6	7BT	
V14	Audio Output	6V6GT	6V6GT	7AV	
V15	2nd Sync. Amp. - Sync. Phase Inv.	6SN7GT	6SN7GT	8BD	
V16	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V17	Vert. Output	6S4	6S4	5BT	
V18	Hor. Phase Det.	6AL5	6AL5	6BT	
V19	Hor. Mult.	6SN7GT	6SN7GT	8BD	
V20	Hor. Output	6CD6G	6CD6G	5BT	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rect.	1B3GT	1B3GT	3C	
V23	HV Rect.	1B3GT	1B3GT	3C	
V24	LV Rect.	5U4G	5U4G	5T	
V25A	Picture Tube	16GP4	16GP4	12D	
B	Picture Tube	19AP4A	19AP4A	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CONRAC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	40	500		AF8K		UP4050		TVL-1820†	Filter
C2	80	500		AF16K		UP8050		TVL-1850	Filter
C3A	20	450		AF4444J		UP222245		TVL-4763	▲ Filter
B	20	450							■ Filter
C	20	450							▲ Filter
D	20	450							V. Amp. Screen
C4A	20	450		AF4444J		UP222245		TVL-4763	▲ Hor. MV Decoup.
B	20	450							■ Decoup.
C	20	450							▲ Decoup.
D	20	450							Decoupling
C5	20	450		PR8450/30		BR2045A		TVA-1709	Decoupling
C6	5	50		PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C7	25	25		PRS25/25		BR252A		TVA-1205	Output Cath. Byp.
C8	50	50		PRS50/50		BR505		TVA-1308	Vert. Output Cath.
C9	5	50		PRS150/4		BR550		TVA-1303	Hor. Output Cath.
C10	5			SI5NPO	TCZ-4.7		NPOK-5		Fixed Trimmer *
C11	.5-3				829-3				Variable Trimmer
C12	.5-3				829-3				Variable Trimmer
C13	120			SI120	TCN-120		GP2K-120	19C29	RF Coupling
C14	1000			SI1000	D6-102		GP2L-001	19C1	RF Fil. Bypass
C15	100			SI100N750	TCN-100		N750L-100	29C16	RF Coupling
C16	.5-3				829-3				Variable Trimmer
C17	20			SI20NPO	TCZ-20		NPOK-20		Osc. Grid Cap.
C18	10			SI10N750	TCN-10		N750K-10	19C4	Fixed Trimmer
C19	1000			SI1000	D6-102		GP2L-001	19C1	RF Bypass
C20	1000			SI1000	D6-102		GP2L-001	19C1	Conv. Fil. Bypass
C21	10			SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C22	72	500							Fixed Trimmer
C23	300			SI300	D6-301		GP2K-300	19C14	IF Coupling
C24	68			SI68	D6-680	5W5Q7	GP1K-68	19C10	Filament Bypass *
C25	5000			BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C26	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Dec.
C27	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Fil.
C28	330			SI330	D6-331	5W5T3	GP2K-330	19C14	IF Coupling
C29	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Dec.
C30	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Fil.
C31	47				TCZ-47		NPOM-47	29C14	Fixed Trimmer
C32	330			SI330	D6-331	5W5T3	GP2K-330	19C14	IF Coupling
C33	5000			BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C34	5000			BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Dec.
C35	5000			BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Fil.
C36	330			SI330	D6-331	5W5T3	GP2K-330	19C14	IF Coupling
C37	.1	400		P488-1	DF-104	PTE4P1		TM-1-4	AGC Filter
C38	5000			BPD-005	DD-502	1D5D5	811-005	29C1	4th V. IF Dec.
C39	5000			BPD-005	DD-502	1D5D5	811-005	29C1	4th V. IF Fil.
C40	5000			BPD-005	DD-502	1D5D5	811-005	29C1	4th V. IF Cath.
C41	100	500		1469-0001	TCZ-100	5R5T1	NPOM-100	MS-31	Fixed Trimmer
C42	330			SI330	D6-331	5W5T3	GP2K-330	19C14	IF Coupling
C43	100			SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C44	5000			BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C45	.1	400		P488-1	DF-104	PTE4P1		TM-1-4	RF Bypass
C46	2			SI3NPO	TCZ-2.2		NPOK-3		V. Diode Filter
C47	5000			BPD-005	DD-502	1D5D5	811-005	29C1	V. Det.-AGC Fil.
C48	100			SI100	D6-101	5W5T1	GP1K-100	19C11	V. Amp. Cath.
C49	56				TCZ-56		NPOM-56		Fixed Trimmer
C50	.1	600		P688-1	DF-104	PTE6P1		TM-1	Video Coupling
C51	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-11	Video Coupling
C52	.1	400		P488-1	DF-104	PTE4P1		TM-1-4	DC Res. Cath.
C53	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st S. IF Dec.
C54	100			SI100	D6-101	5W5T1	GP1K-100	19C11	1st S. IF Fil.,*
C55	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd S. IF Dec.
C56	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd S. IF Cath.
C57	33			SI33	D6-330	5W5Q4	GP1K-33	19C24	Diode Load Cap.
C58	4000			SI4000	D6-402	1D5D4	GP2M-004	TM-24	De-emphasis
C59	.02	600		P688-02	DF-203	PTE6S2		TM-12	Audio Coupling
C60	5000			BPD-005	DD-502	1D5D5	811-005	29C1	Audio Coupling
C61	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-24	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CONRAC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C62	4000			SI4000	D6-402	1D5D4	GP2M-004	TM-12	Output Plate Bypass
C63	.02	600		P688-02	DF-203	PTE6S2		TM-12	Sync. Coupling
C64	.02	600		P688-02	DF-203	PTE6S2			Sync. Coupling
C65	100			SI100	D6-101	5W5T1	GP1K-100	19C11	Sync. Coupling
C66A	10000			BPD-01	PC-101	PTE8S1	811-01	TM-11	Vert. Sync. Coupling
B	2000			BPD-002		PTE6D2	GP2M-002	TM-22	Integrator Net.
C	5000			BPD-005		PTE6D5	811-005	TM-25	Integrator Net.
D	5000			BPD-005		PTE6D5	811-005	TM-25	Integrator Net.
C67	10000	500		1467-01		1D3S1	811-01	1FM-11	Vert. MV Feedback
C68	6000	500		1467-006		1D5D6		1FM-26	Vert. MV Grid
C69	.05	600		P688-05		PTE6S5		TM-15	Vert. Discharge
C70	.1	600		P688-1	DF-104	PTE6P1		TM-1	Vert. Sweep Coupling
C71	500	500		1468-0005	D6-501	5W5T5	GP2K-500	1FM-35	Hor. Sync. Coupling
C72	500	500		1468-0005	D6-501	5W5T5	GP2K-500	1FM-35	Hor. Sync. Coupling
C73	5000			BPD-005	DD-502	1D5D5	811-005	29C1	AFC Filter
C74	.05	600		P688-05	DF-503	PTE6S5		TM-15	AFC Filter
C75	270	500		1468-0003	D6-271	5W5T25	GP2K-270	1FM-325	Hor. MV Feedback
C76	6000	500		1467-006		1D5D6		1FM-26	Fixed Trimmer
C77	.1	600		P688-1	DF-104	PTE6P1		TM-1	Hor. MV Decoupling
C78	500	500		1468-0005	D6-501	5W5T5	GP2K-500	1FM-35	Hor. Discharge *
C79	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-11	Hor. Sweep Coupling
C80	.25	600		684-25		GT6P25		TM-2	Hor. Output Screen
C81	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-11	Fixed Trimmer *
C82	.035	600		P688-033		PTE6S3		TM-13	Hor. Feedback
C83	6000	500		1467-006		1D5D6		1FM-26	Voltage Divider
C84	.03	400		P488-03		PTE6S3		TM-13	Fixed Trimmer
C85	.1	600		P688-1		PTE6P1		TM-1	Fixed Trimmer
C86	.1	600		P688-1	DF-104	PTE6P1		TM-1	Hor. Sweep Coupling
C87	240	2500							Fixed Trimmer
C88	500	10000		HV10C	TV2-501				Voltage Doubler Cap.
C89	500	10000		HV10C	TV2-501				HV Filter
C90	500	20000		HV20C	TV2-502				HV Filter
C91	.5-3				829-3				Variable Trimmer

* Not used in all models.
† Install new mounting plate.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CONRAC PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	274-R30	QI3-133	AG-60-Z	B-60-S	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½	270-R18	QI1-133	AG-58-S	B-59	Brightness control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R2A per instructions
R3A	1000Ω	½	R40I		AM-8-S		Contrast control
B	Shaft		Not Req.		FS-3		Attach to R3A per instructions
R4A	100KΩ	½	270-R54	QI1-128	AG-49-S	AN-40	Horiz. hold control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	250KΩ	½	270-R69	QI1-130	AG-55-S	AN-50	Vert. hold control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	2 Meg.	½	460-R510	QI1-139	AG-53-S	AN-75	Height control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7	3000Ω	2	270-R71	WK-3000	43-3000	VK-133	Vert. linearity control-Wire Wound
R8	3000Ω	4	500-R305		RTV-61	SVP-988	Focus control-Wire Wound

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CONRAC PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R9	3900Ω	½		BTS-3900	Ant. Coil Shunt
R10	47KΩ	½			AGC Network
R11	10KΩ	½			RF Coil Shunt
R12	2200Ω 20%	½		BTS-2200	RF Decoupling
R13	4700Ω	½		BTS-4700	Mixer Grid
R14	220KΩ 20%	½			Mixer Grid
R15	15KΩ 20%	½			Mixer Plate Load
R16	4700Ω	½		BTS-4700	Osc. Plate Load
R17	10KΩ	½			Osc. Grid
R18	10KΩ 5%	½			1st Video IF Amp. Grid
R19	50Ω	½			1st Video IF Amp. Cathode
R20	150Ω	½		BTS-150	Decoupling
R21	10KΩ 5%	½			2nd Video IF Amp. Grid
R22	50Ω	½			2nd Video IF Amp. Cathode
R23	150Ω	½		BTS-150	Decoupling
R24	1000Ω	½		BTS-1000	AGC Network
R25	1000Ω	½		BTS-1000	AGC Network
R26	4700Ω 5%	½		BTS-4700-5%	3rd Video IF Amp. Grid
R27	50Ω	½			3rd Video IF Amp. Cathode
R28	5600Ω 5%	½			3rd Video IF Amp. Plate Load
R29	150Ω	½		BTS-150	Decoupling
R30	150Ω	½		BTS-150	4th Video IF Amp. Cathode
R31	5600Ω 5%	1			4th Video IF Amp. Plate Load
R32	150Ω	½		BTS-150	Decoupling
R33	1 Meg. 20%	½		BTS-1 Meg.	AGC Network-See Note 1
R34	470KΩ 20%	½		BTS-470K	AGC Diode Load
R35	2700Ω 5%	½		BTS-2700-5%	Video Det. Diode Load
R36	470KΩ 20%	½		BTS-470K	Voltage Divider
R37	33KΩ 20%	½		BTS-33K	Video Amp. Screen
R38	10KΩ	½		BTS-10K	Peaking Coil Shunt-See Note 2
R39	3900Ω	2		BTB-3900	Video Amp. Plate Load
R40	68KΩ 20%	½		BTS-68K	Picture Tube Cathode
R41	56KΩ	½		BTS-56K	Picture Tube Cathode
R42	22KΩ 20%	½		BTS-22K	Isolation
R43	1 Meg. 20%	½		BTS-1 Meg.	DC Restorer Grid
R44	1 Meg.	½		BTS-1 Meg.	DC Restorer Cathode
R45	1 Meg.	½		BTS-1 Meg.	Voltage Divider
R46	150Ω	½		BTS-150	1st Sound IF Cathode
R47	1000Ω	½		BTS-1000	1st Sound IF Decoupling
R48	150Ω	½		BTS-150	2nd Sound IF Cathode
R49	22KΩ 20%	½			2nd Sound IF Decoupling
R50	270Ω	½		BTS-270	Balancing
R51	22KΩ 20%	½		BTS-22K *	*De-emphasis

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CONRAC PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R52	10KΩ 20%	½		BTS-10K	Ratio Det. Diode Load
R53	10KΩ 20%	½		BTS-10K	Ratio Det. Diode Load
R54	10 Meg. 20%	½		BTS-10 Meg.	AF Grid
R55	240KΩ 20%	½		BTS-220K	AF Plate Load
R56	2.2 Meg. 20%	½		BTS-2.2 Meg.	Feedback
R57	470KΩ 20%	½		BTS-470K	Output Grid
R58	250Ω	½		BTS-270	Output Cathode
R59	1000Ω 20%	2		BTB-1000	Decoupling
R60	10KΩ	½		BTS-10K	Isolation
R61	1 Meg. 20%	½		BTS-1 Meg.	1st Sync. Amp. Grid
R62	220KΩ	½		BTS-220K	1st Sync. Amp. Plate
R63	22KΩ 20%	½		BTS-22K	Voltage Divider
R64	2.2 Meg. 20%	½		BTS-2.2 Meg.	2nd Sync. Amp. Grid
R65	1000Ω	½		BTS-1000	2nd Sync. Amp. Cathode
R66	22KΩ 20%	½		BTS-22K	2nd Sync. Amp. Plate
R67A	22KΩ	½			Voltage Divider
B	22KΩ	½			Integrator
C	8200Ω	½			Integrator
D	8200Ω	½			Integrator
R68	2200Ω	½		BTS-2200	Vert. Mult. Cathode
R69	240KΩ	½		BTS-220K	Vert. Mult. Plate
R70	240KΩ	½		BTS-220K	Vert. Mult. Grid
R71	1.2 Meg.	½		BTS-1.2 Meg.	Vert. Mult. Plate
R72	6800Ω	½		BTS-6800	Vert. Peaking
R73	1 Meg. 20%	½		BTS-1 Meg.	Vert. Output Grid
R74	1000Ω	1		BTA-1000	Vert. Output Cathode
R75	3.9 Meg.	½		BTS-3.9 Meg.	Phase Inv. Grid
R76	6800Ω	½		BTS-6800	Phase Inv. Cathode
R77	6800Ω	½		BTS-6800	Phase Inv. Plate
R78	100KΩ 20%	½		BTS-100K	Horiz. AFC Diode Load
R79	100KΩ 20%	½		BTS-100K	Horiz. AFC Diode Load
R80	470KΩ 20%	½		BTS-470K	Horiz. AFC Filter
R81	47KΩ	½		BTS-47K	Horiz. AFC Diode Load
R82	6800Ω	½		BTS-6800	Horiz. Feedback
R83	1500Ω 5%	½		BTS-1500-5%	Horiz. Mult. Cathode
R84	4700Ω 5%	½		BTS-4700-5%	Horiz. Mult. Plate
R85	10KΩ	1		BTA-10K	Horiz. Mult. Plate Decoupling
R86	220KΩ	½		BTS-220K	Horiz. Mult. Grid
R87	240KΩ	½		BTS-220K	Horiz. Mult. Plate
R88	4700Ω 5%	½		BTS-4700-5%	Horiz. Peaking
R89	150Ω	½			Parasitic Suppressor-See Note 3
R90	240KΩ	½		BTS-220K	Horiz. Output Grid
R91	3000Ω	10		1 3/4A-300	Horiz. Output Cathode-Wire Wound
R92	4700Ω	2		BTB-4700	Horiz. Output Screen- See Note 4
R93	3900Ω	2		BTB-3900	Horiz. Output Screen- See Note 5
R94	1000Ω	½		BTS-1000	Horiz. Linearity Coil Shunt
R95	1 Meg. 20%	2			HV Rect. Load
R96	1 Meg. 20%	2			HV Rect. Load
R97	10KΩ	10		1 3/4A-10K	Bleeder-Wire Wound-See Note 4
R98	2000Ω	10		1 3/4A-2000	Voltage Divider-Wire Wound
R99	2000Ω	10		1 3/4A-2000	Voltage Divider-Wire Wound
R100	1500Ω	10		1 3/4A-1500	Focus Coil Shunt-Wire Wound
R101	470Ω 20%	1		BTA-470	Focus Coil Shunt
R102	10Ω	½		BW-½-10	Bias Network-Wire Wound
R103	56KΩ	½		BTS-56K	Audio Output Grid-See Note 5
R104	100KΩ	½		BTS-100K	Horiz. MV Plate Decoupling

Note 1. Some models use a 1.2 Meg. resistor in this application.
Note 2. Some models use a 15KΩ resistor in this application.
Note 3. Some models use a 100Ω resistor in this application.
Note 4. Some models use a 8200Ω, 3 watt resistor in this application.
Note 5. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CONRAC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ③ 2.4A	740VCT .280ADC	5VAC ③ 3A	6.3VAC ③ 1.2A SEC. 4 6.3VAC ③ 10.6A			P-3169 ②	TP-380 ② P-633 ③

② Drill new mounting holes.
③ Use for SEC. #3

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: CONRAC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	205Ω Tap ① 50Ω	80Ω Tap ② 50Ω SEC. 2 .5Ω SEC. 3 0Ω SEC. 4 0Ω					Hor. Output Trans.
T3	1200Ω Tap ①	1Ω		A-8123	A-3037		Vert. Output Trans.
T4A	13Ω			DY-7	MD-70		Hor. Deflection Coil
B	48Ω						Vert. Deflection Coil
T5	1500Ω						Focus Coil

CONRAC MODELS 36, 39

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CONRAC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T6	7400Ω	4.5Ω	560Ω	.7Ω		A-3878 ①	A-3020	RO-13 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	CONRAC PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4.5Ω			12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 1/2"	1"				

FILTER CHOKE

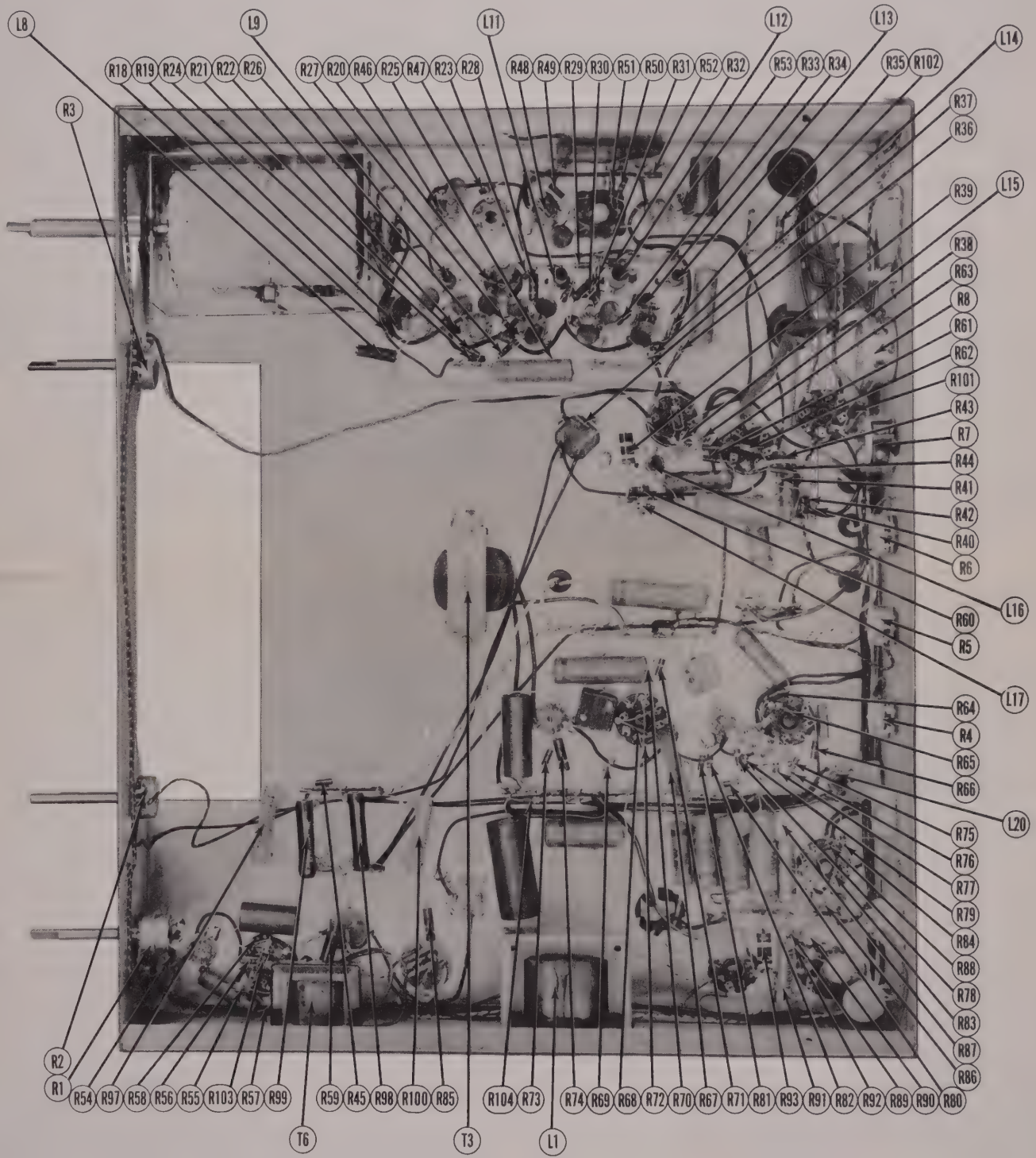
ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	CONRAC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.280ADC	80Ω	4, 5 Henries	13865	C-2326 ①	C-2991	TR-3300①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	CONRAC PART No.	MEISSNER PART No.	
L2	Ant. Coils	0Ω	0Ω			
L3	RF, Mixer Grid & Osc.	0Ω				
L4	Fil. Choke	.1Ω				
L5	Fil. Choke	.1Ω				
L6	1st Video IF	.5Ω				
L7	Trap Coil	.5Ω				
L8	1st Video IF Coupling	1.1Ω				
L9	2nd Video IF	.6Ω				
L10	3rd Video IF -Sound Take Off	.2Ω	0Ω			
L11	4th Video IF	.6Ω				
L12	Sound Trap	0Ω	0Ω			
L13	5th Video IF	7Ω				
L14	Peaking	6.8Ω				55 microhenries
L15	Peaking	13Ω			19-1921	120 microhenries
L16	4.5MC Trap	1.2Ω				
L17	Peaking	11Ω			19-1922	300 microhenries, may be wound on resistor.
L18	Sound IF	.1Ω	.1Ω			
L19	Ratio Det. Trans.	.1Ω	.1Ω			
L20	Horiz. Freq.	35Ω				
L21	Horiz. Lin.	5.8Ω				Tap at 1.5Ω
L22	Horiz. Size	.5Ω				

MISCELLANEOUS

ITEM No.	PART NAME	CONRAC PART No.	NOTES
M1	RF Tuner		
M2	Switch		TV-Phono
M3	Ion Trap		

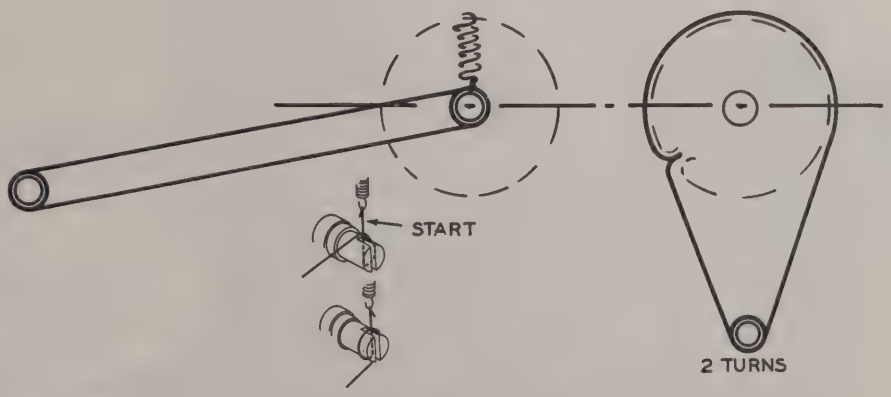


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

CORONADO MODEL 05RA2-43-8515A

TRADE NAME	Coronado, Model 05RA2-43-8515A		
SUPPLIER	Gamble-Skogmo Inc., 15 N. 8th St., Minneapolis, Minnesota		
TYPE SET	AC Operated AM-FM Superheterodyne Receiver with Loop Antenna		
TUBES (EIGHT)	Types 12AT7 FM RF Amp-Mixer, 6BA7 FM Osc.-AM Conv., 6BA6 1st IF Amp., 6AU6 2nd FM IF Amp., 6AL5 Ratio Det., 6AV6 AM DET.-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier		
POWER SUPPLY	110-120 Volts AC	RATING	.53 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	535-1620KC	FREQ. MOD.	88-108MC

TUNING GANG FULLY CLOSED



DIAL CORD DRIVE

CORONADO
MODEL 05RA2-43-8515A

CORONADO
MODEL 05RA2-43-8515A

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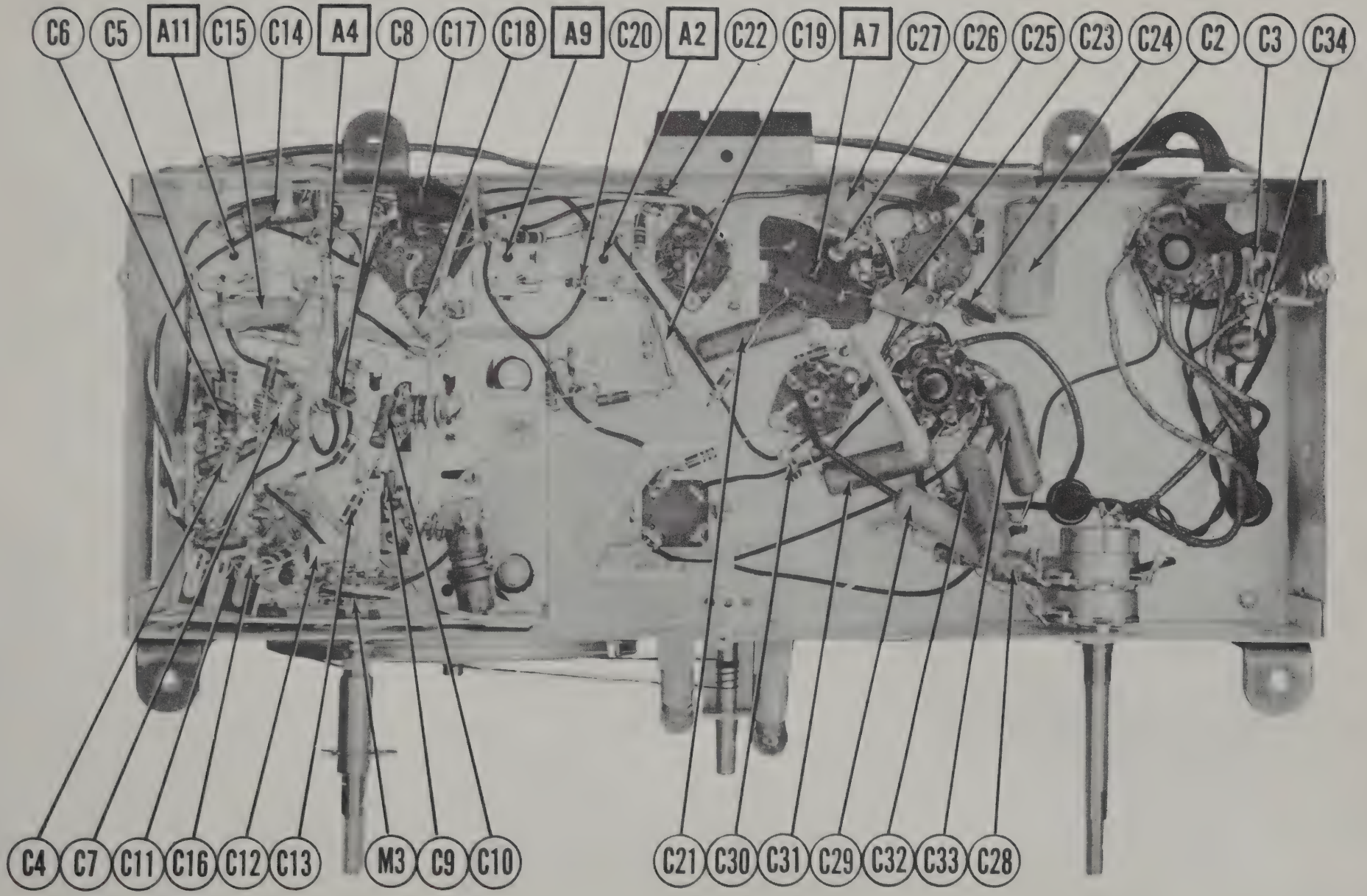
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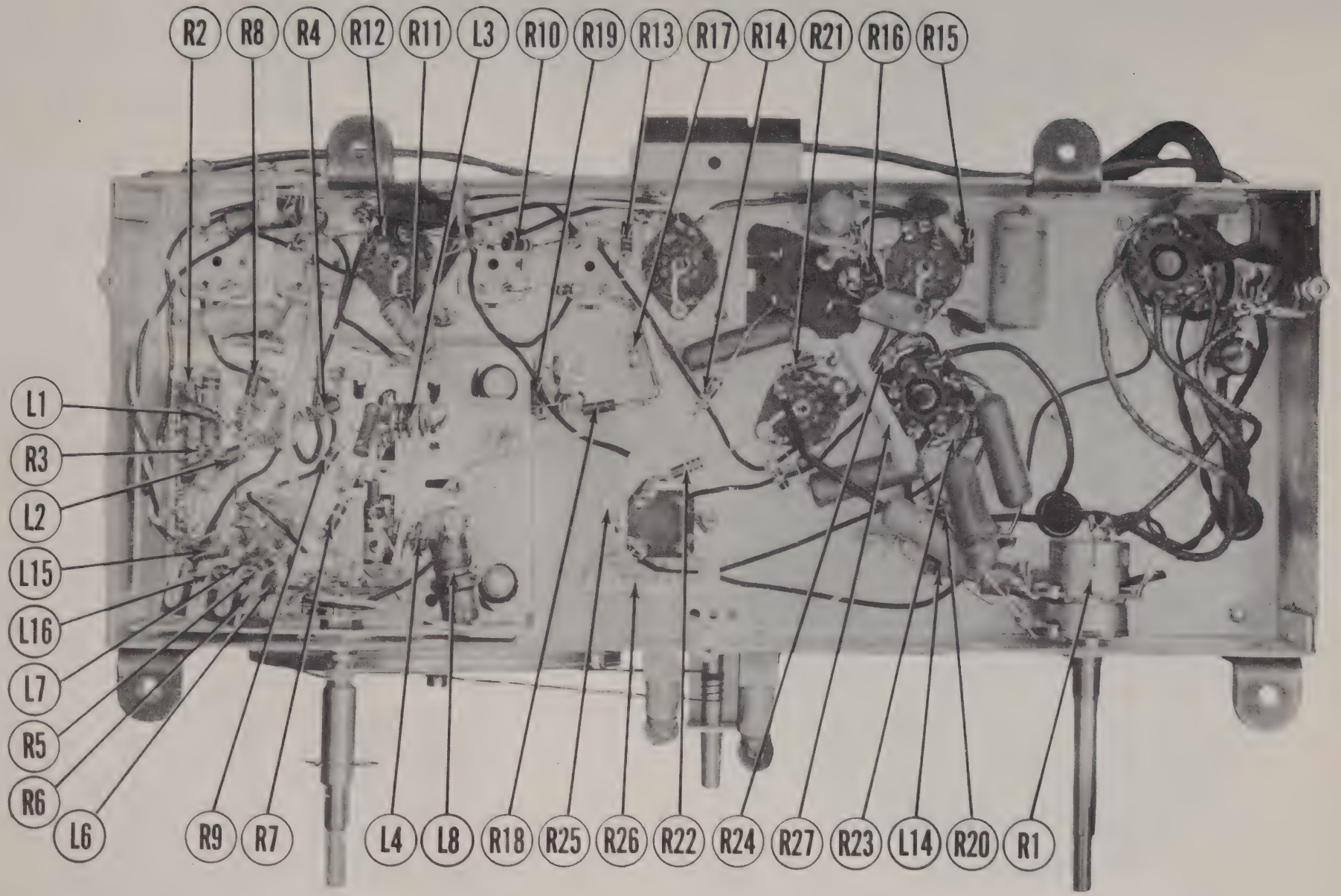
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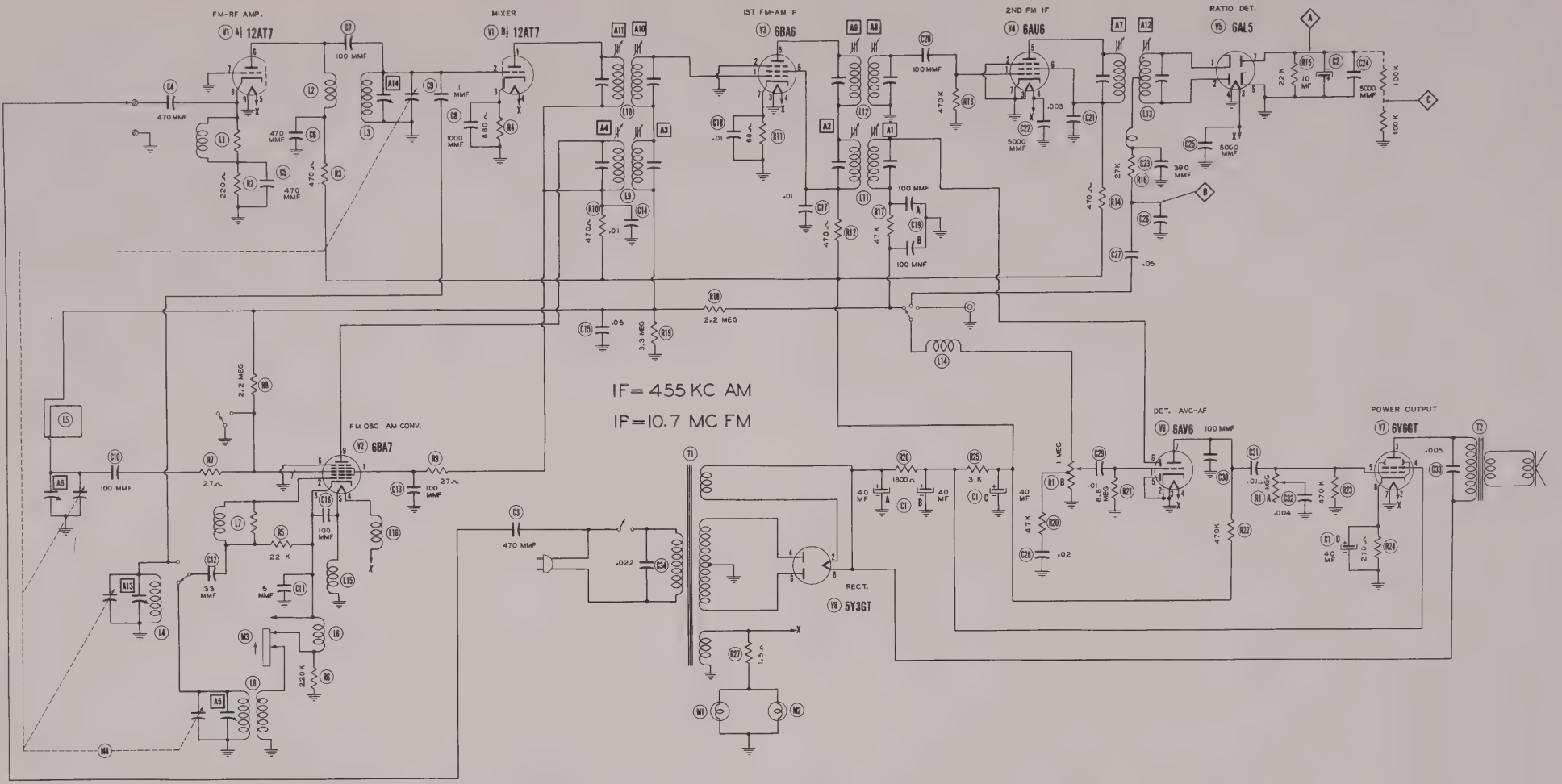

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	†85VDC	†0V	†1.4VDC	6.3VAC	6.3VAC	†80VDC	0V	†1VDC	0V
V 2	6BA7	85VDC	†-4VDC ▲-3.2VDC	0V	6.3VAC	0V	0V	†-.1VDC ▲-.2VDC	0V	85VDC
V 3	6BA6	-.1VDC	0V	0V	6.3VAC	85VDC	85VDC	.8VDC		
V 4	6AU6	†-.5VDC	0V	0V	6.3VAC	†85VDC	†85VDC	0V		
V 5	6AL5	†-.2VDC	†-.2VDC	6.3VAC	0V	0V	0V	†-.3VDC		
V 6	6AV6	-.8VDC	0V	0V	6.3VAC	0V	▲-.6VDC	40VDC		
V 7	6V6GT	0V	6.3VAC	255VDC	200VDC	0V	0V	0V	9.2VDC	
V 8	5Y3GT	0V	265VDC	0V	255VAC	0V	255VAC	0V	265VDC	

§ TAKEN WITH VACUUM TUBE VOLTMETER

† TAKEN IN FM POSITION
▲ V & R TAKEN IN BROADCAST POSITION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	†5.3KΩ	0Ω	680Ω	.1Ω	.1Ω	†5.3KΩ	0Ω ▲2.8Meg.	220Ω	0Ω
V 2	6BA7	†5.3KΩ	22KΩ	.8Ω	.6Ω	.6Ω	0Ω	†0Ω ▲2.8Meg.	0Ω	†5.3KΩ
V 3	6BA6	†1.2Meg. ▲1.7Meg.	0Ω	0Ω	.1Ω	†5.3KΩ	†5.3KΩ	68Ω		
V 4	6AU6	470KΩ	0Ω	0Ω	.1Ω	†5.3KΩ	†5.3KΩ	0Ω		
V 5	6AL5	Inf.	Inf.	.1Ω	0Ω	0Ω	Inf.	22KΩ		
V 6	6AV6	6.8 Meg.	0Ω	0Ω	.1Ω	0Ω	▲1 Meg.	†475KΩ		
V 7	6V6GT	Inf.	.1Ω	†490Ω	†1.8KΩ	470KΩ	1Ω	0Ω	270KΩ	
V 8	5Y3GT	Inf.	300KΩ	Inf.	120Ω	Inf.	140Ω	Inf.	200KΩ	

† MEASURED FROM PIN 8 OF V8

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer in horizontal position.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 6BA7 (V2). Low side to chassis.	455KC (400 ∿ Mod.)	AM (1st position CW)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	"	Tune for max. output	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from point A to chassis. The junction of these two resistors is alignment point C as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.1MFD	High side to pin 2 (Grid) of 12AT7 (V1). Low side to chassis.	10.7MC (Unmod.)	FM (fully CW)	Tuning gang fully open	DC Probe to Point (A). Common to chassis.	A7, A8, A9, A10, A11	Adjust for maximum deflection.
5.	.1 MFD.	"	"	"	"	DC Probe to Point (B). Common to Point (C).	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.1MFD	High side to pin 2 (Grid) of 12AT7 (V1). Low side to chassis.	10.7MC (450KC Sweep)	FM (fully CW)	Tuning gang fully open	Vert. Amp. to Point (A). Low side to chassis.	A7, A8, A9, A10, A11	Disconnect stabilizer capacitor C2. Adjust for maximum amplitude and symmetry as per fig. 1.
5.	.1MFD	"	"	"	"	Vert. Amp. to Point (B). Common to chassis.	A12	Reconnect capacitor C2. Adjust A12 to place 10.7MC at center of crossover lines as per fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	300Ω carbon res.	High side thru 300Ω to left hand "FM" antenna terminal. Low side to right hand antenna terminal.	109MC	FM (fully CW)	Tuning gang fully open	DC Probe to Point A . Common to chassis.	A13	Adjust for maximum deflection.
7.	"	"	98MC	"	Tune for max. deflection.	"	A14	"

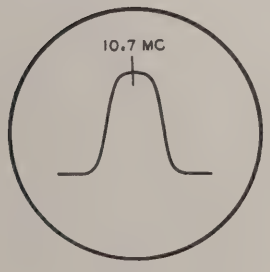


FIG. 1

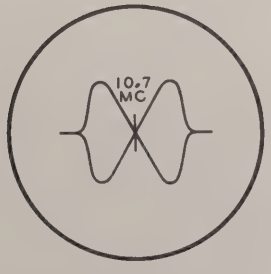


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
V1	FM-RF Amp.-Mixer	12AT7	12AT7	9A	
V2	FM Osc.-AM Conv.	6BA7	6BA7	8CT	
V3	1st FM-AM IF	6BA6	6BA6	7BK	
V4	2nd FM-IF	6AU6	6AU6	7BK	
V5	Ratio Det.	6AL5	6AL5	6BT	
V6	AM DET-AVC-AF	6AV6	6AV6	7BT	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	350	A-8C-18125	AF888H8A		UPT44445		TVL-3787	▪ Filter
B	40	350				BR502A		TVA-1206	■ Filter
C	40	350							▲ Filter
D	40	25							Output Cath. Byp.
C2	10	50	A-8C-18128	PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C3	470		C-8G-11732	SI470	D6-471	5W5T5	GP2K-470	19C15	Line Ant. Coupling
C4	470		C-8G-11732	SI470	D6-471	5W5T5	GP2K-470	19C15	Ant. Coupling
C5	470		C-8G-11732	SI470	D6-471	5W5T5	GP2K-470	19C15	FM RF Cathode
C6	470		C-8G-11732	SI470	D6-471	5W5T5	GP2K-470	19C15	FM RF Plate Dec.
C7	100		C-8G-13131	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C8	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-001	29C21	FM RF Mixer Cath.
C9	1		A-8G-12495-2		TCZ-1				Osc. Coupling
C10	100		C-8G-1279	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C11	5		C-8G-12166	SI5NPO	TCZ-4.7	5R5V5	NPOK-5		Fixed Trimmer
C12	33		C-8G-14172	SI33NPO	TCZ-33	5W5Q3	NPOL-33	29C13	Osc. Grid Cap.
C13	100		C-8G-12759	SI100	D6-101	5W5T1	GP1K-100	19C11	Osc. Anode Bypass
C14	.01	400	C-8D-10761	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Conv. Decoupling
C15	.05	200	C-8D-10770	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C16	100		C-8G-12759	SI100	D6-101	5W5T1	GP1K-100	19C11	Conv. Cathode
C17	.01	400	C-8D-10761	P488-01	D6-103	PTE4S1	811-01	4TM-S1	1st IF Decoupling
C18	.01	200	C-8D-11738	P488-01	D6-103	PTE4S1	811-01	4TM-S1	1st IF Cath.
C19A	100		A-8F-13127	SI100	D6-101	5W5T1	GP1K-100	19C11	Diode RF Filter
B	100			SI100	D6-101	5W5T1	GP1K-100	19C11	Diode RF Filter
C20	100		C-8G-11734	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C21	.003	600	C-8D-11013	P688-003	D6-302	PTE6D3	GP2M-003	6TM-D3	2nd IF Decoupling
C22	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Fil.
C23	390	500	C-8F3-120	1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	Diode Load Cap.
C24	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C25	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	29C1	Ratio Det. Fil.
C26	2000		C-8G-16049	SI2000	D6-202	1W5D2	GP2M-002	29C2	De-emphasis
C27	.05	200	C-8D-10770	P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C28	.02	200	C-8D-11304	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C29	.01	200	C-8D-11738	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C30	100		C-8G-11734	SI100	D6-101	5W5T1	GP1K-100	19C11	AF Amp. Plate
C31	.01	400	C-8D-10761	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C32	.004	600	C-8D-10788	P688-004	D6-402	PTE6D4	GP2M-004	6TM-D4	Tone Comp.
C33	.005	600	C-8D-10935	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate
C34	.022	600	C-8J-11321	P688-022	DF-203	PTE6S2		6TM-S22	Line Filter

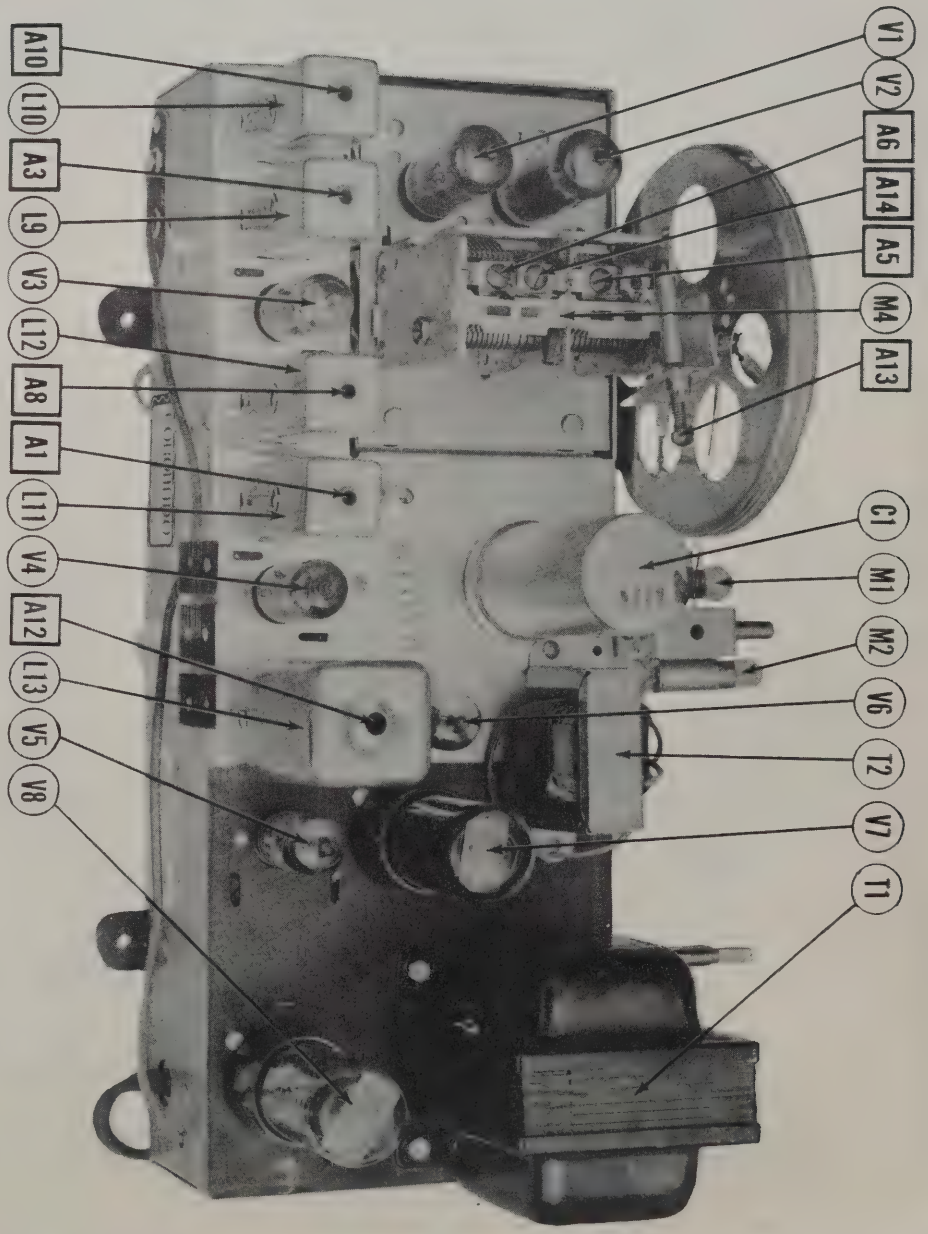
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	1 Meg.	½	A-10A-18703			SBBT-520-S	Tone control-front
B	1 Meg.	½					Volume control and switch-tapped at 100KΩ-rear

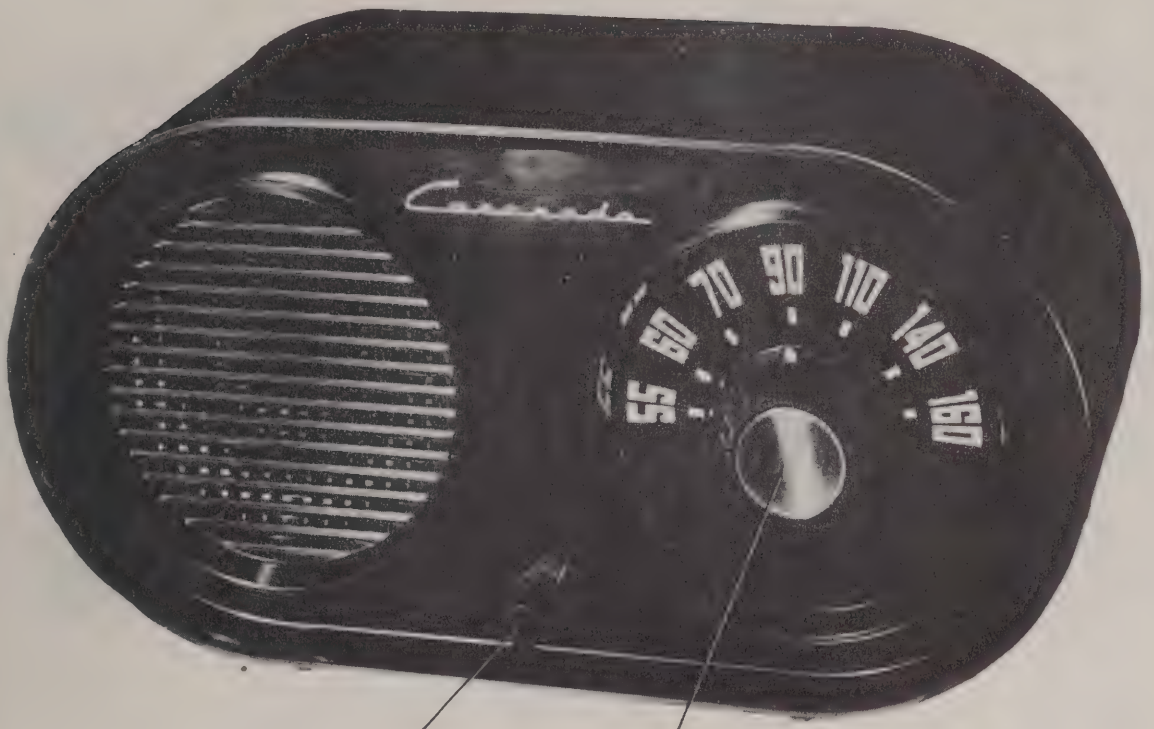
SET 110

FOLDER 5

CHASSIS—TOP VIEW



CORONADO
MODEL 05RA33-43-8120A



CORONADO
MODEL 05RA33-43-8120A

CORONADO MODEL 05RA33-43-8120A

TRADE NAME	Coronado, Model 05RA33-43-8120A
SUPPLIER	Gamble-Skogmo, Inc., 15 N. 8th St., Minneapolis, Minnesota
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 12BE6 Converter, 12AT6 DET-AVC-AF, 50B5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .27 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	535-1630KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer 3/16" below the "55" calibration at the low frequency end of dial. Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	100MMFD	High side to pin 7 (Grid) of 12BE6 (V1). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.	100MMFD	"	1630KC	"	"	A3	"
3.	100MMFD	High side to antenna lead. Low side to chassis.	1400KC	Tune for max. output.	"	A4	"

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PARTS LIST AND DESCRIPTIONS

CORONADO
MODEL 05RA33-43-8120A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	DET-AVC-AF	12AT6	12AT6	7BT	
V3	Power Output	50B5	50B5	7BZ	
V4	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	C40-20-1.5	PRS150/20-40		EDL-4215		TVA-2438	Filter-Red
B	20	150							Filter-Blue
C2	.05	200	C052	P288-05	DF-503	PTE4S5		2TM-S5	Line Isolation
C3	5		C55C	SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	RF Coupling
C4	.05	200	C052	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C5	100	500	C1005M	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C6	.002	600	C0026	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Audio Coupling
C7	.005	600	C0056	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C8	.005	600	C0056	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate Byp.
C9	.05	400	C054	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	VRT64	Q13-137	AG-63-Z	BSK-70-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

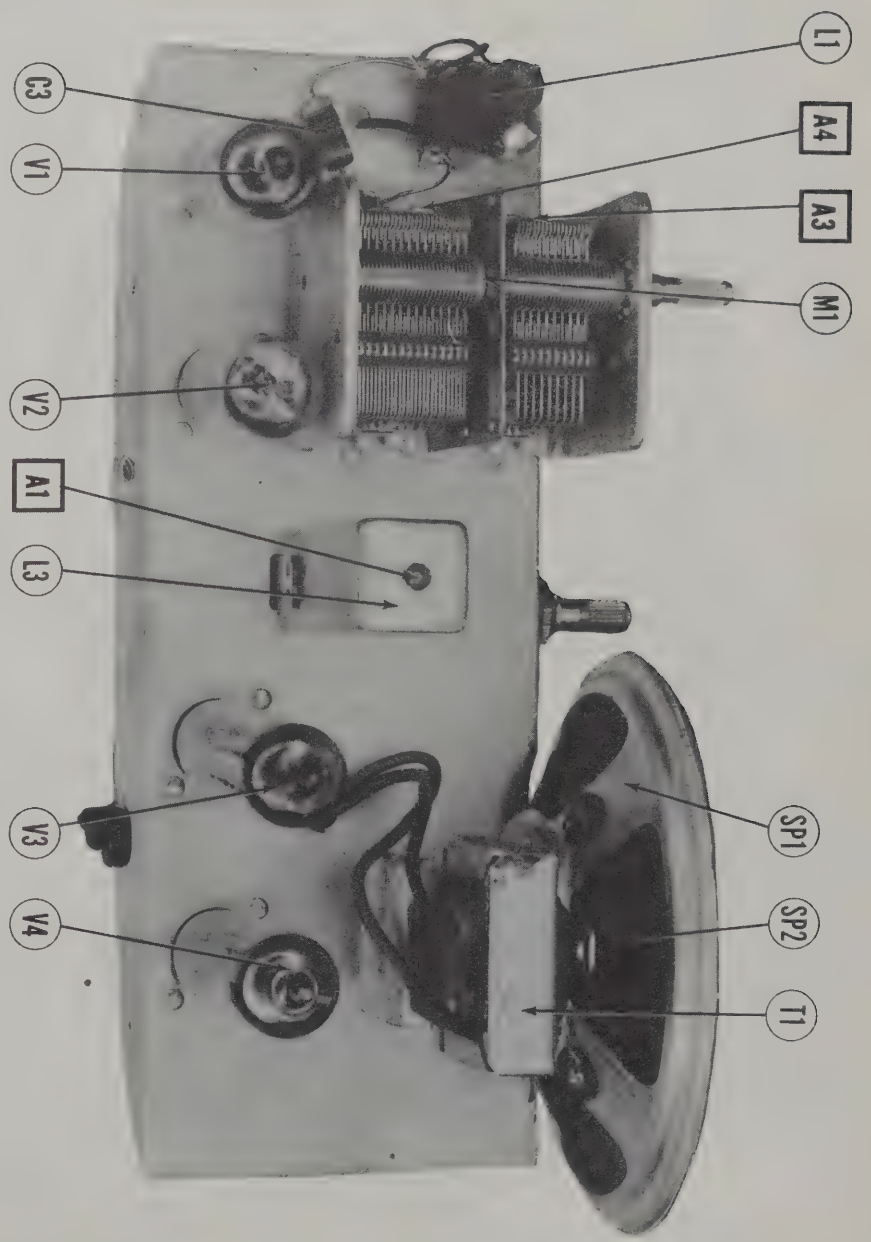
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	R223.5	BTS-22K	Osc. Grid
R3	2.2 Meg.	½	R225.5	BTS-2.2 Meg.	AVC Network
R4	10 Meg.	½	R106.5	BTS-10 Meg.	AF Grid
R5	330KΩ	½	R334.5	BTS-330K	AF Plate
R6	220KΩ	½	R224.5	BTS-220K	Output Grid
R7	2200Ω	½	R222.5	BTS-2200	Filter
R8	68Ω	2	R6802	BW-2-68	Filament Dropping-Wire Wound

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	3000Ω	3.5Ω	156Ω	.5Ω	SPKT64-T	A-3332 ①	A-3025 ①	RO-2 ①	① Bend mounting tabs down.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CORONADO PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.5Ω	SPKT64-S		4A07R	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

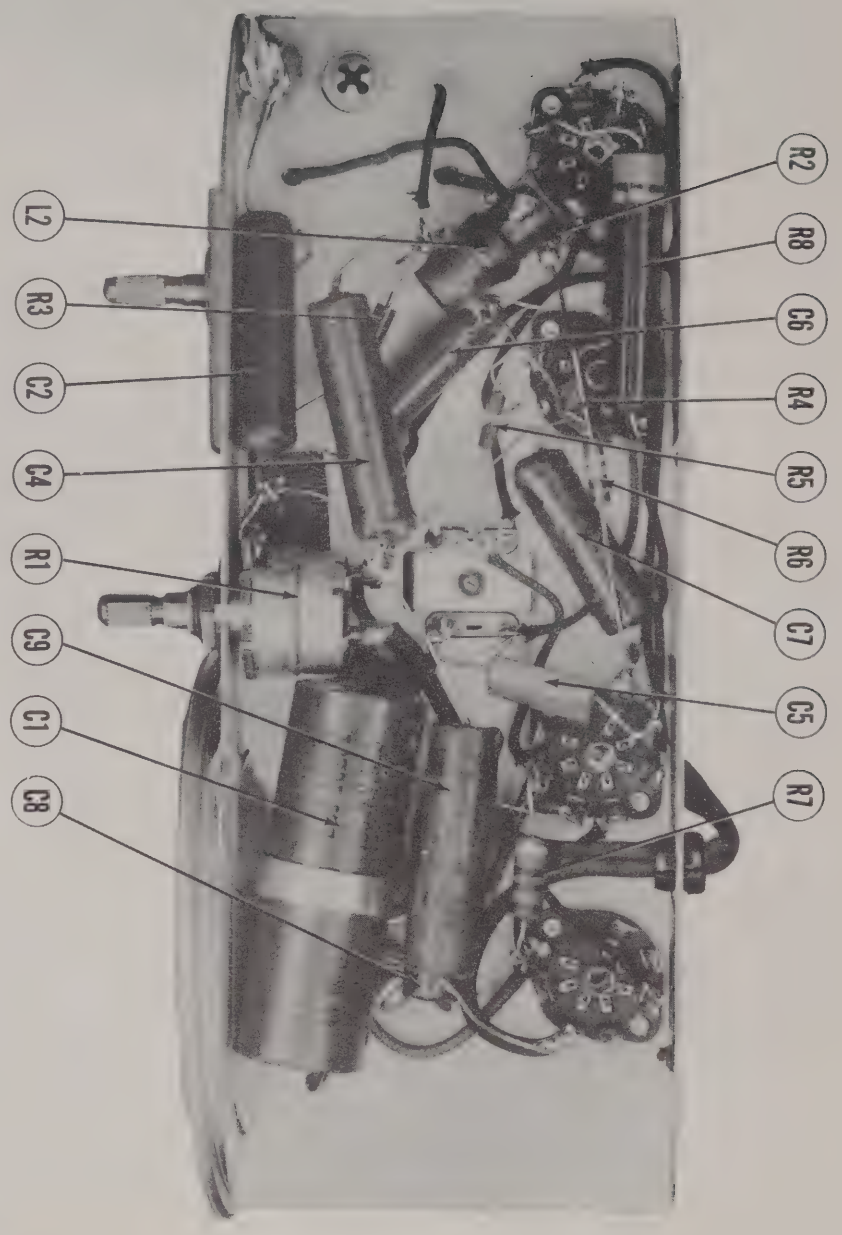
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	
L1	Ant. Coil	28Ω	3Ω	T64LA		
L2	Osc. Coil	.6Ω	8.5Ω	T64LO	14-1073	
L3	1st IF	22Ω	22Ω	T112-10		

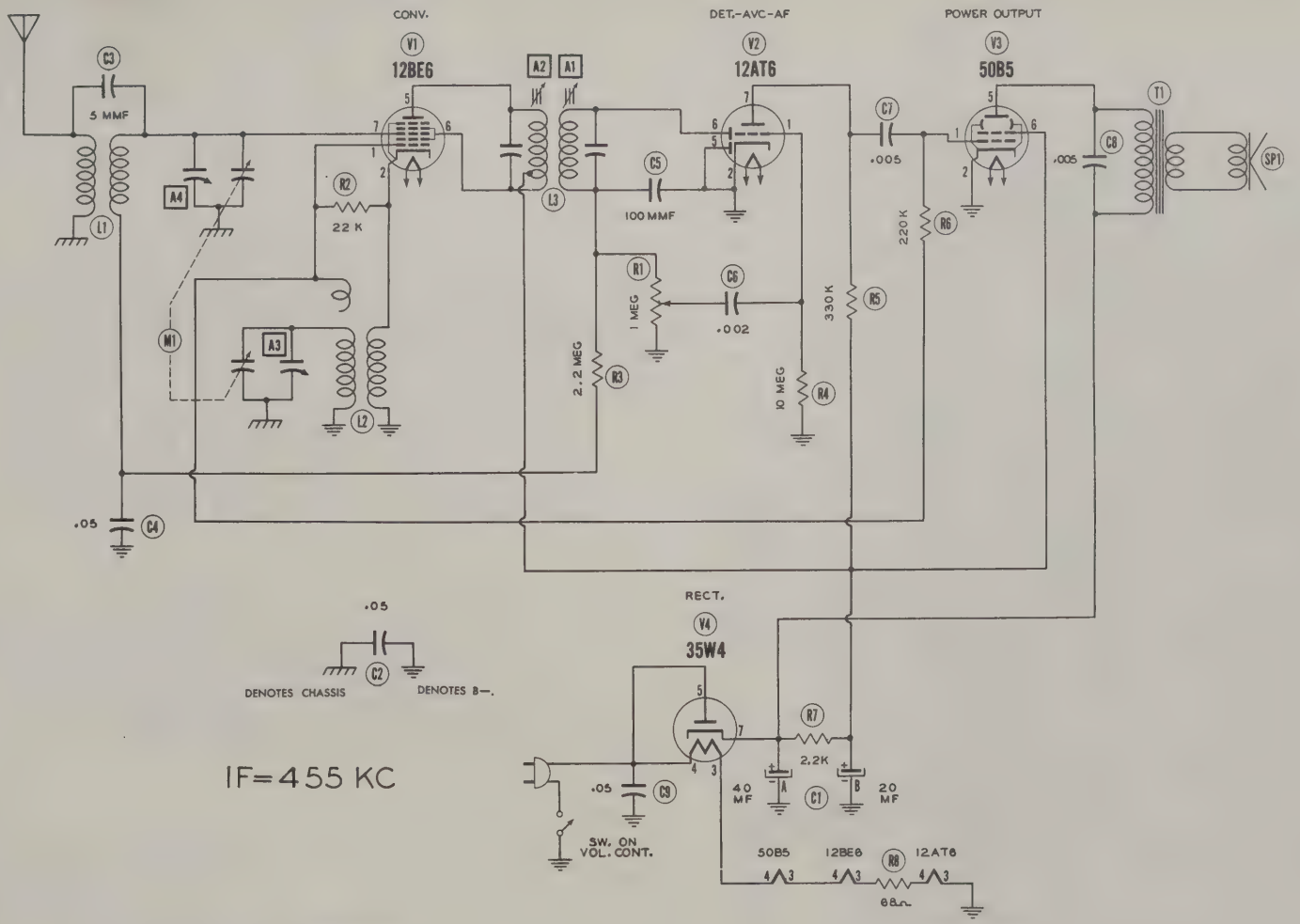
MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M1	2 Gang Var. Cap.	C8120	(35-495MMF, 31-212MMF)
	Cabinet	P1701	
	Pointer Knob	P1704-A	
	Round Knob	P1704-B	

CHASSIS—BOTTOM VIEW



CORONADO MODEL 05RA33-43-8120A



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-4VDC	0V.	21VAC	33VAC	85VDC	85VDC	-.2VDC
V 2	12AT6	-.6VDC	0V.	0V.	13VAC	0V.	-.5VDC	43VDC
V 3	50B5	-2VDC	0V.	33VAC	80VAC	120VDC	85VDC	-2VDC
V 4	35W4	0V.	0V.	80VAC	117VAC	117VAC	108VAC	130VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	32KΩ	.6Ω	81Ω	93Ω	†2.2KΩ	†2.2KΩ	3.2 Meg.
V 2	12AT6	10 Meg.	0Ω	0Ω	13Ω	0Ω	1 Meg.	†330KΩ
V 3	50B5	240KΩ	0Ω	93Ω	145Ω	†156Ω	†2.2KΩ	240KΩ
V 4	35W4	Inf.	Inf.	145Ω	180Ω	180Ω	175Ω	65KΩ

† MEASURED FROM PIN 7 OF V4.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

DUMONT MODELS

RA-109-A1, -A2, -A3, -A5, -A6, -A7

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MODEL "SHERBROOKE"

DUMONT MODELS

RA-109-A1, -A2, -A3, -A5, -A6, -A7

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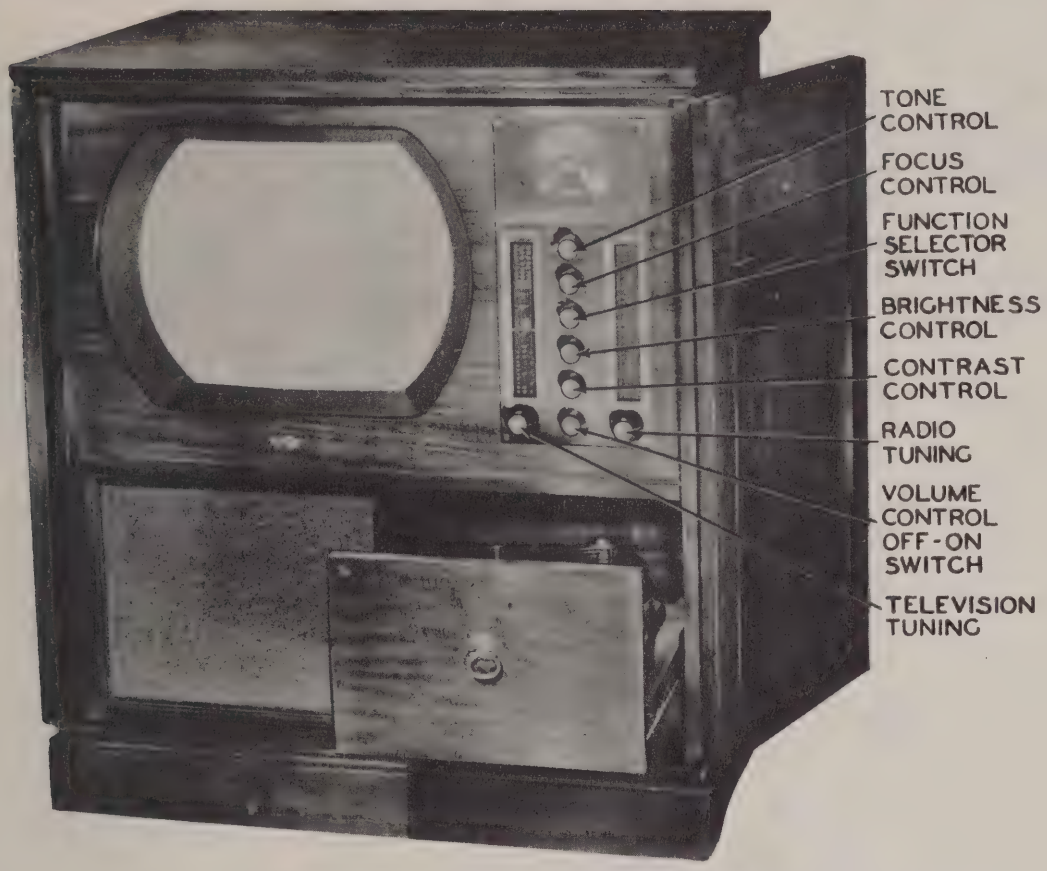
Date 10/50 Set No. 110—Folder No. 7



DUMONT MODEL RA-109-A3 "SHERBROOKE"

TRADE NAME	Dumont, Models RA-109-A1, RA-109-A5 (Winslow), RA-109-A2, RA-109-A6 (Hanover), RA-109-A3, RA-109-A7 (Sherbrooke)
MANUFACTURER	Allen B. Dumont Labs., Inc., 2 Main Ave., Passaic, New Jersey
TYPE SET	TV-Radio-Phono Combination Receiver (Some Versions "TV-FM" Only)
TUBES	Thirty Nine (Sherbrooke Receivers) Thirty Five (Hanover and Winslow Receivers)
POWER SUPPLY RATINGS	110-120 Volts AC-60 Cycle 2.9 Amp. at 117 Volts AC (TV), 2.2 Amp. at 117 Volts AC (AM)
TUNING RANGE	TV-FM 44-216MC (Continuous Tuning), AM 540-1600KC

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RECORD CHANGER UNIT-WEBSTER-CHICAGO MODEL 100

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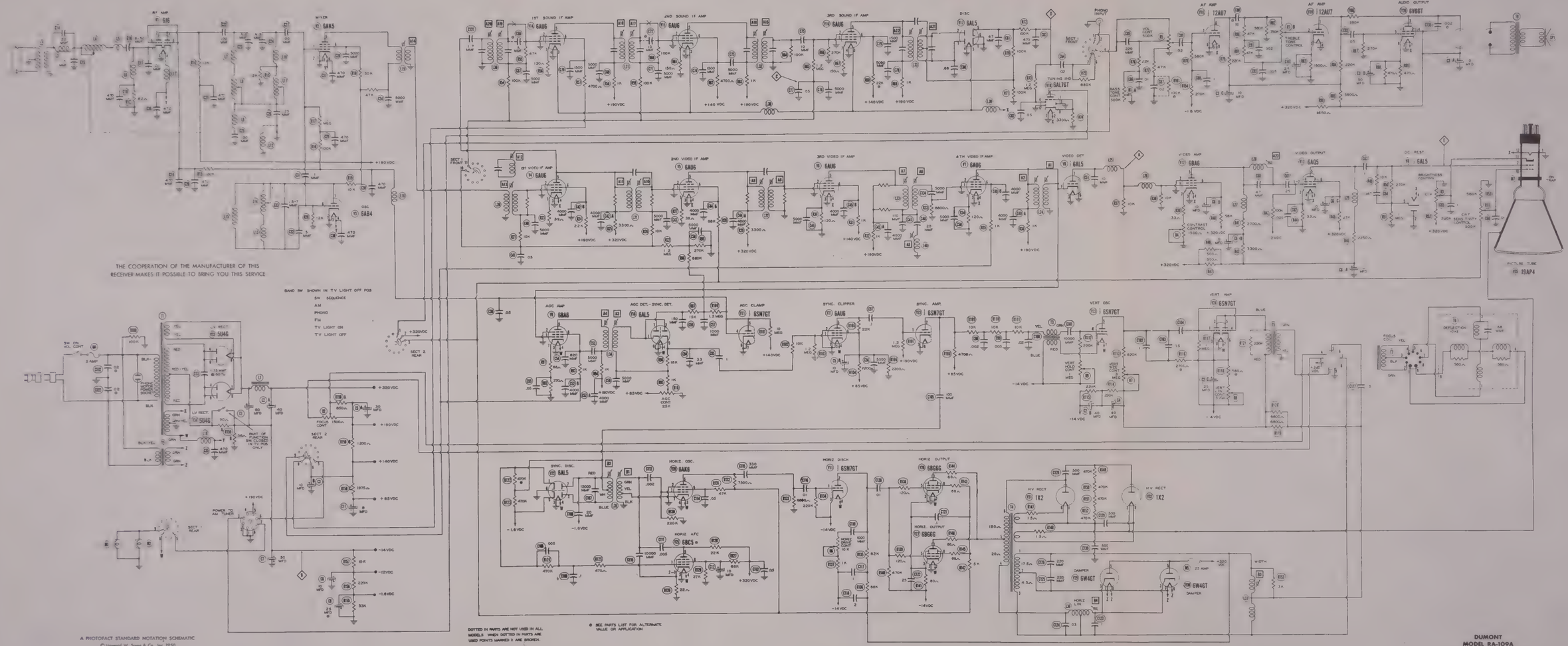
DUMONT
MODEL RA-109A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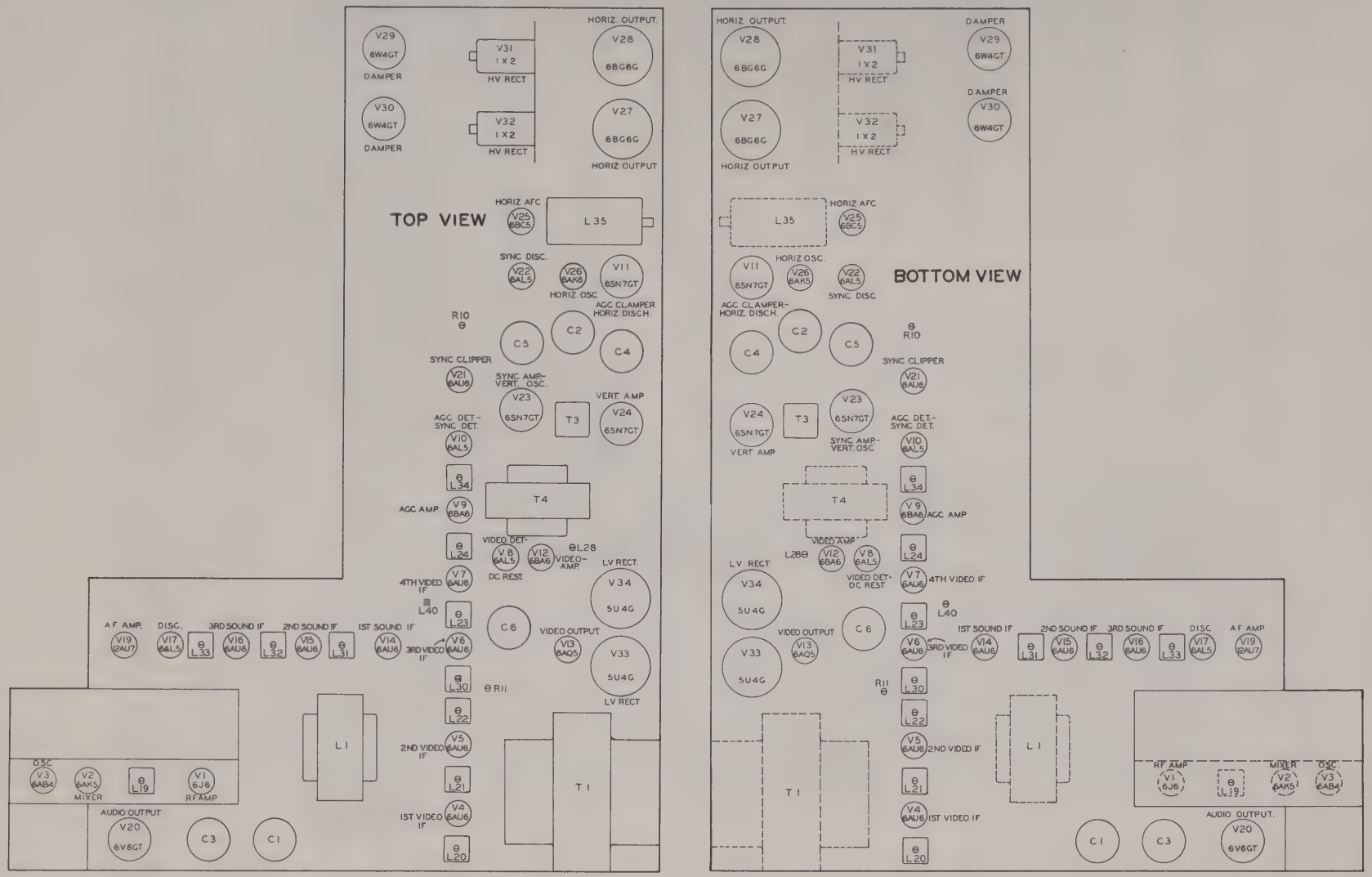
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
@ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION



TUBE PLACEMENT CHART

DUMONT
MODEL RA-109A

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate the high voltage shock hazard remove the damper tubes V29 and V30 from its socket.

VIDEO IF ALIGNMENT

Remove the local oscillator tube (V3) from its socket to prevent erroneous indications.
Remove the sync amplifier tube (V21) from its socket and replace with a 6AU6 with pin 3 and 4 removed.
Turn the AGC control fully counter-clockwise.
Turn the function switch to TV position (fully clockwise).
The 1st Video IF Stage bandwidth is controlled by the coupling loop in the mixer transformer L19. This is pre-set and should not be touched except when the tuner assembly is replaced. If the tuner is replaced it should be adjusted for the curve known in figure 7 as in step 8.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	270MMF	High side to pin 1 (Grid) of 6AU6 (V7). Low side to chassis.	24MC (10MC SWP)	21.75MC 22.25MC 22.75MC 25.5MC 26.25MC	Any	Vert. Amp. to Point (A). Low side to chassis.	A1, A2	Adjust for response curve similar to figure 1 with markers as shown.
2.	270MMF	"	24MC (10MC SWP)	25.5MC 26.25MC	"	Vert. Amp. to pin 1 (Grid) of 6AU6 (V21). Low side to chassis.	A3, A4	Adjust for response curve similar to figure 2 with markers as shown.
3.	270MMF	High side to pin 1 (Grid) of 6AU6 (V6). Low side to chassis.	Not used	21.75MC (400 ∿ Mod.)	"	Vert. Amp. thru detector probe as shown in figure 3 to pin 5 (plate) of 6AU6 (V7). Low side to chassis.	A5	Adjust for MINIMUM 400 ∿ indication on scope.
4.	270MMF	"	24MC (10MC SWP)	22.25MC 22.75MC 25.5MC 26.25MC	"	"	A6, A7	Adjust for response curve similar to figure 4 with markers as shown.
5.	270MMF	High side to pin 1 (Grid) of 6AU6 (V5). Low side to chassis.	"	21.75MC 22.25MC 22.75MC 25.5MC 26.25MC	"	Vert. Amp. thru detector probe to pin 5 (plate) of 6AU6 (V6). Low side to chassis.	A8, A9	Adjust for response curve similar to figure 5 with markers as shown.
6.	270MMF	High side to pin 1 (Grid) of 6AU6 (V4). Low side to chassis.	"	21.75MC 22.25MC 22.75MC 25.5MC 26.25MC	"	Vert. Amp. thru detector probe to pin 5 (plate) of 6AU6 (V5). Low side to chassis.	A10, A11	Adjust for response curve similar to figure 6 with markers as shown.
7.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	Not used	27.75MC (400 ∿ Mod.)	"	Vert. Amp. thru detector probe to pin 5 (plate) of 6AU6 (V4). Low side to chassis.	A12	Adjust for MINIMUM 400 ∿ indication on scope.
8.	Direct	"	24MC (10MC SWP)	21.75MC 22.25MC 22.75MC 25.5MC 26.25MC	"	"	A13, A14	Adjust for response curve similar to figure 7 with markers as shown.

SOUND IF ALIGNMENT

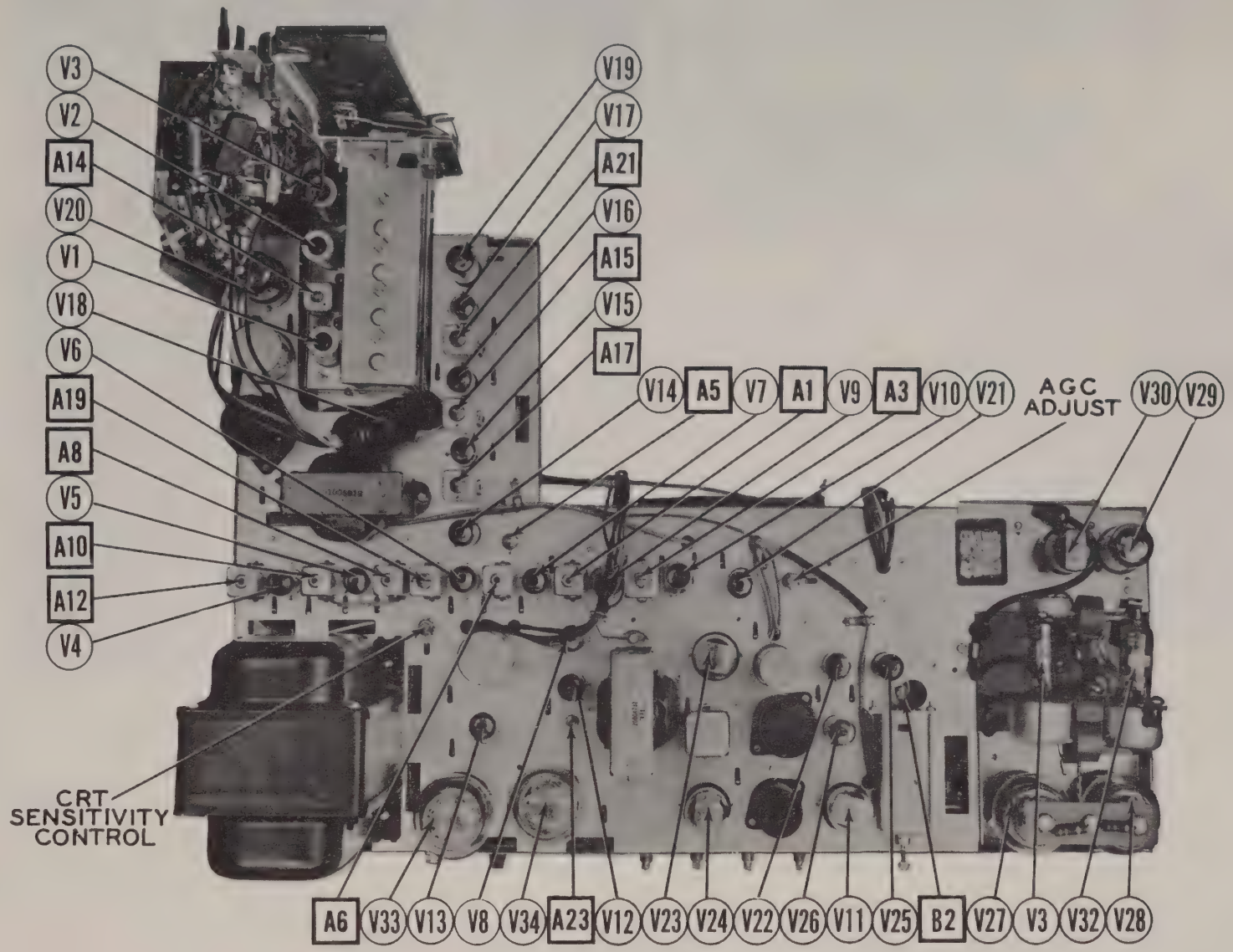
Connect a 100KΩ potentiometer for bias as shown in figure 8. Adjust potentiometer to prevent overload while aligning sound IF.
Turn the function switch to FM position (3rd position clockwise).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	270MMF	High side to pin 1 (Grid) of 6AU6 (V15). Low side to chassis.	21.75MC (1MC SWP)	21.65MC 21.75MC 21.85MC	Any	Vert. Amp. thru detector probe to pin 5 (plate) of 6AU6 (V16). Low side to chassis.	A15, A16	Adjust for response curve similar to figure 9 with markers as shown.
10.	270MMF	High side to pin 1 (Grid) of 6AU6 (V14). Low side to chassis.	"	"	"	Vert. Amp. to pin 5 (plate) of 6AU6 (V15). Low side to chassis.	A17, A18	"
11.	270MMF	High side to pin 1 (Grid) of 6AU6 (V4). Low side to chassis.	"	"	"	Vert. Amp. to pin 5 (plate) of 6AU6 (V16). Low side to chassis.	A19, A20	Adjust for response curve similar to figure 10 with markers as shown.
12.	270MMF	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A21, A22	Adjust A21 to place 21.75MC at center of diagonal line as per figure 11. Adjust A22 for maximum amplitude and straightness of crossover lines.

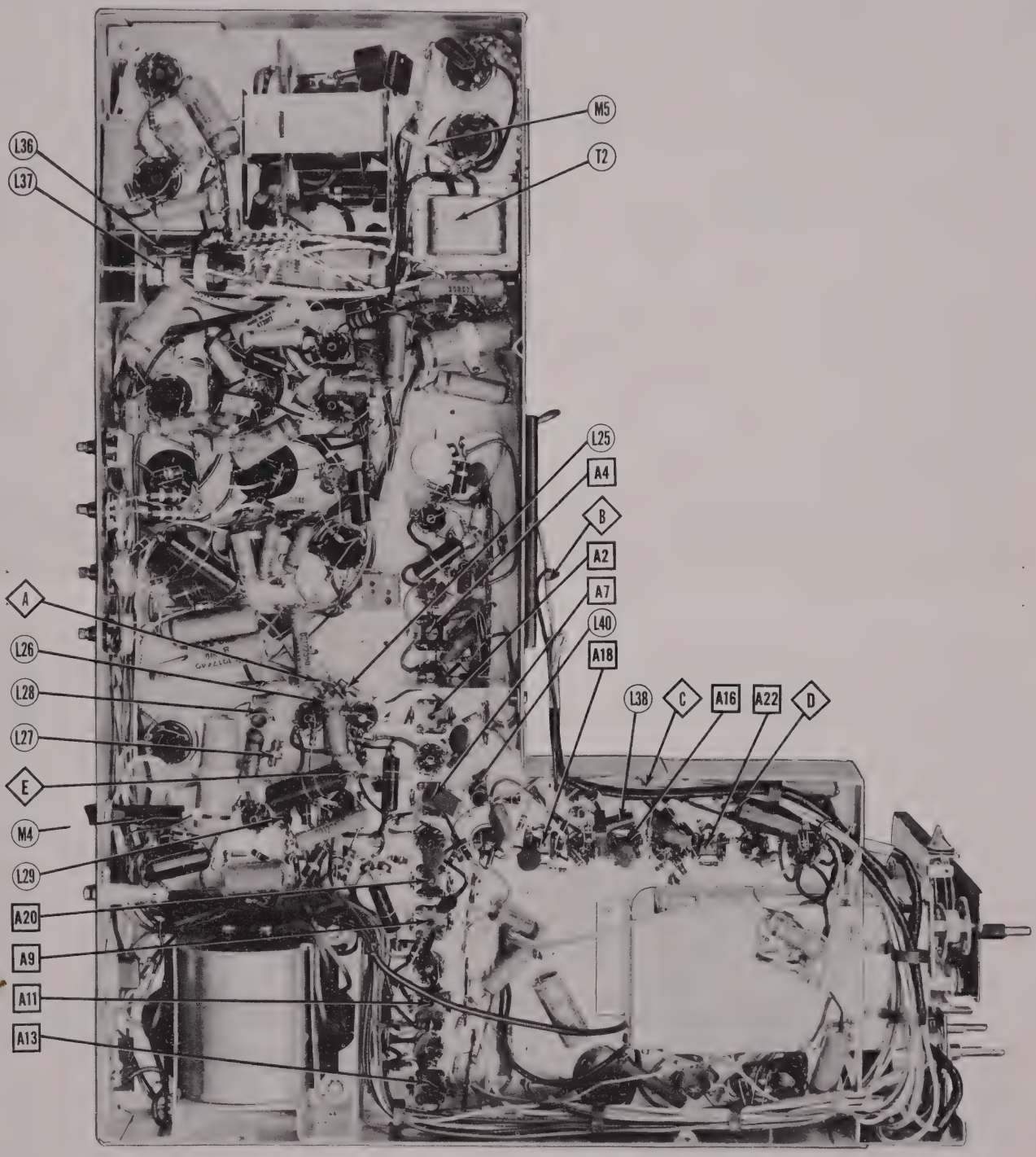
4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	270MMF	High side to pin 7 (plate) of 6AL5 (V8). Low side to chassis.	Not used	4.5MC (400 ∿ Mod.)	Any	Vert. Amp. thru detector probe to Point (E). Low side to chassis.	A23	Adjust for MINIMUM 400 ∿ indication on scope. After alignment is complete tune in a test pattern and adjust for maximum vertical wedge definition.

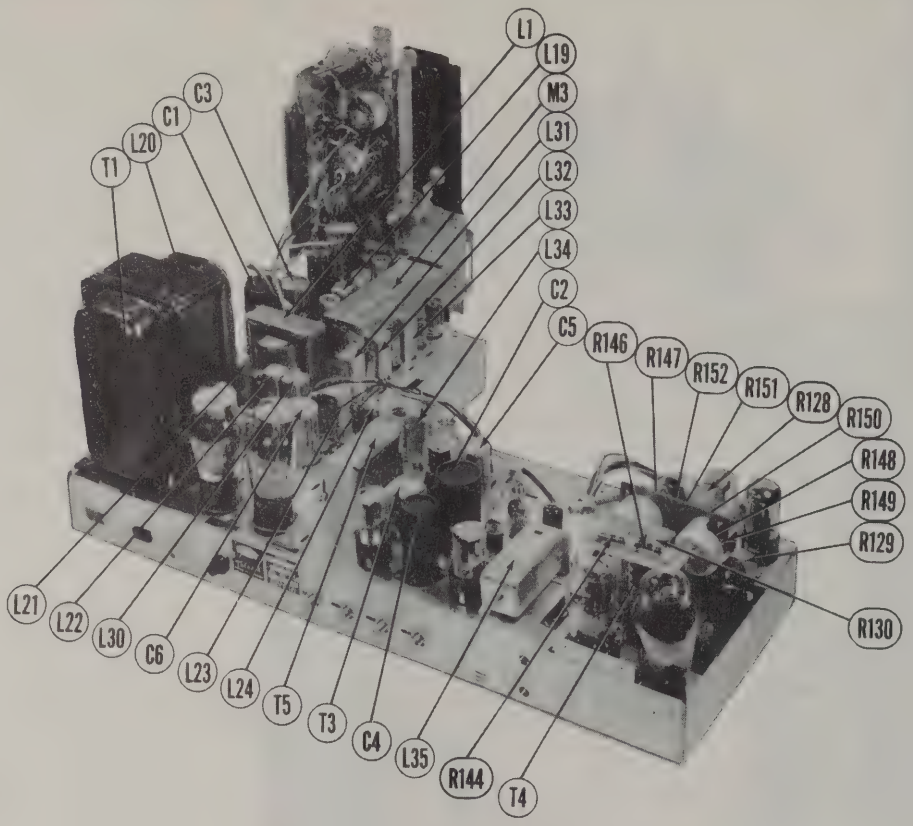
THE RF TUNER PORTION OF THIS RECEIVER HAS BEEN PRE-ALIGNED AT THE FACTORY, AND IS VERY STABLE AND SHOULD NOT REQUIRE ADJUSTMENT IN THE FIELD.



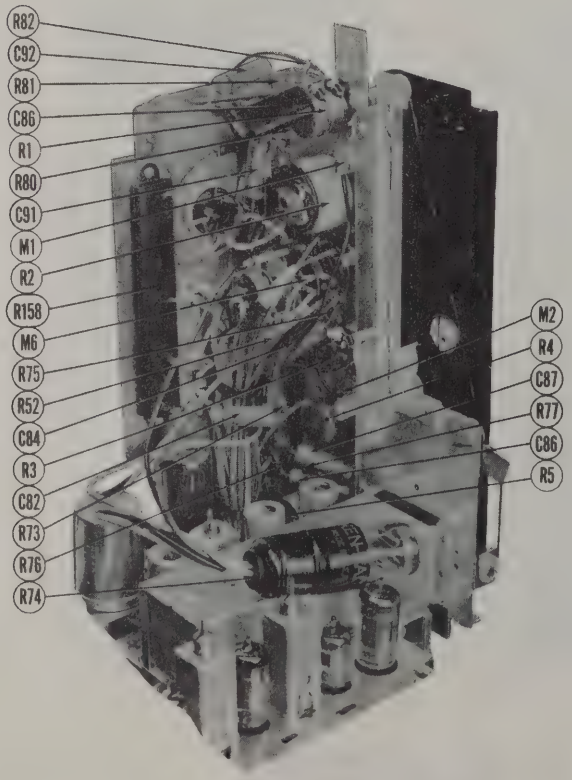
CHASSIS TOP VIEW



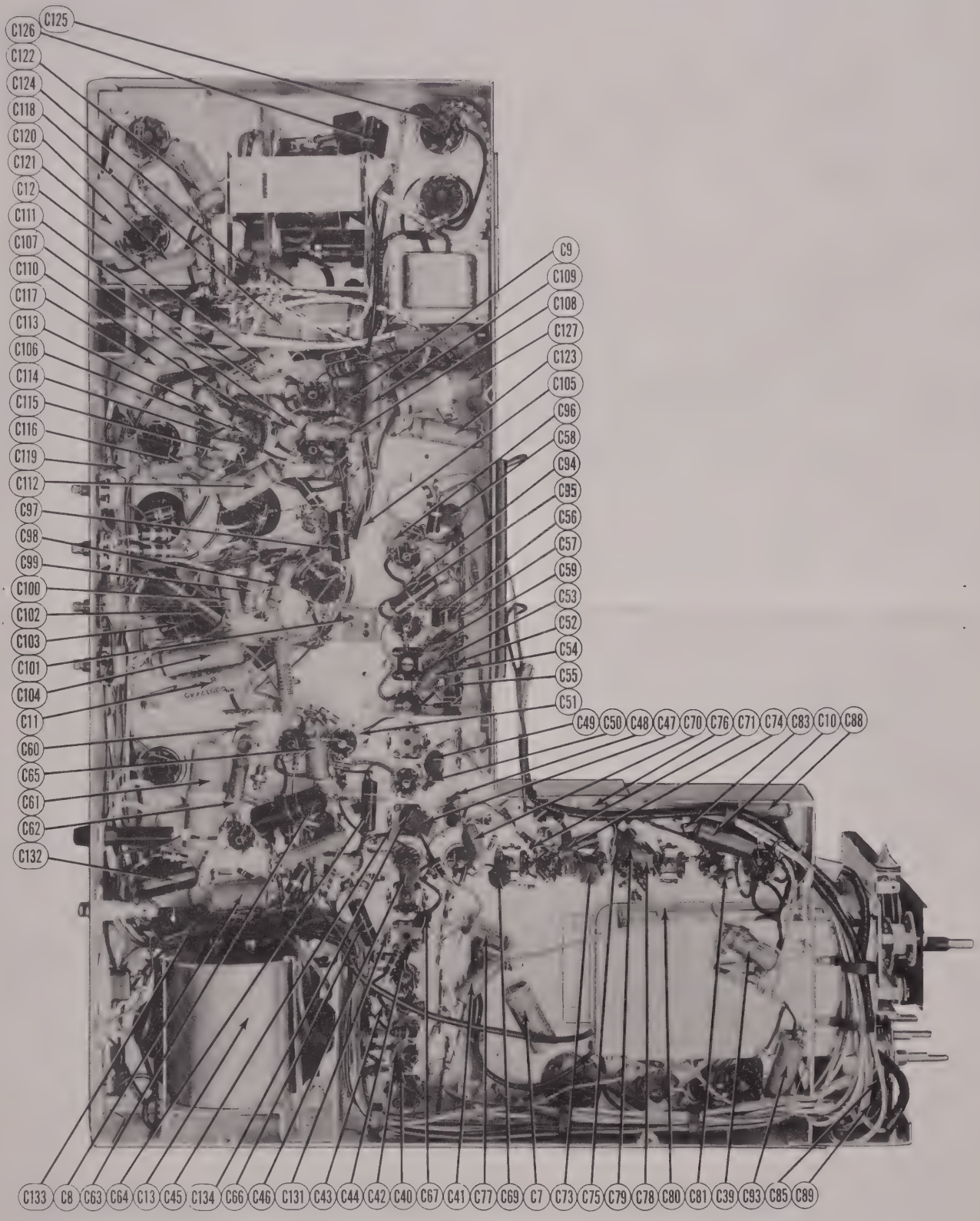
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



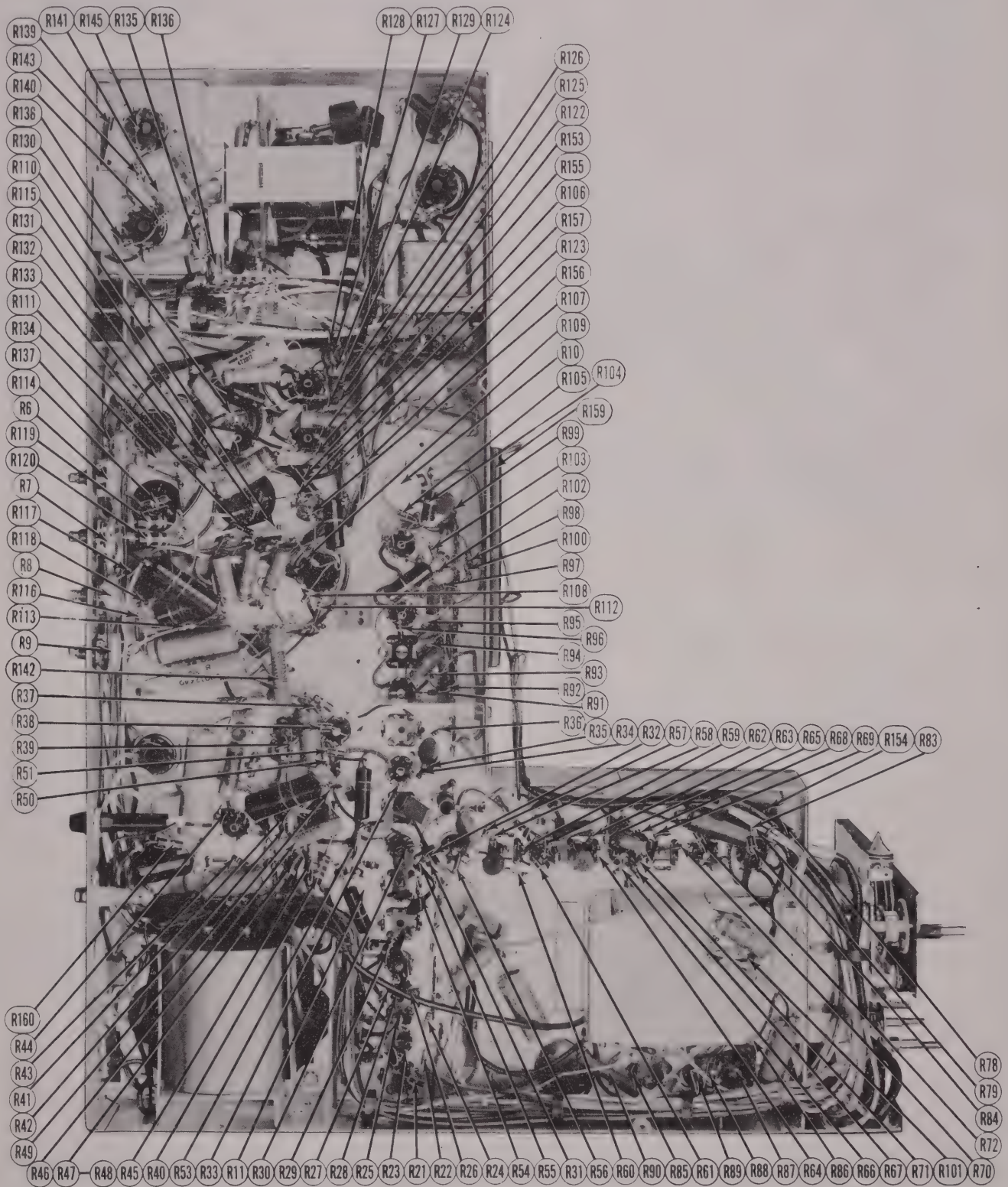
CHASSIS-TOP VIEW



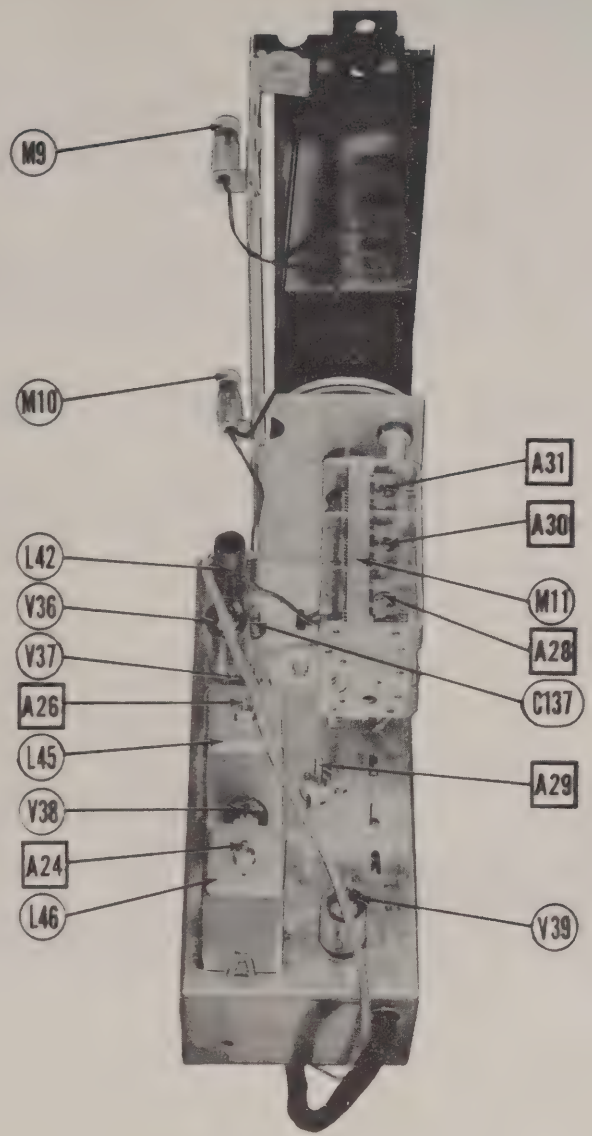
CHASSIS-PARTIAL TOP VIEW



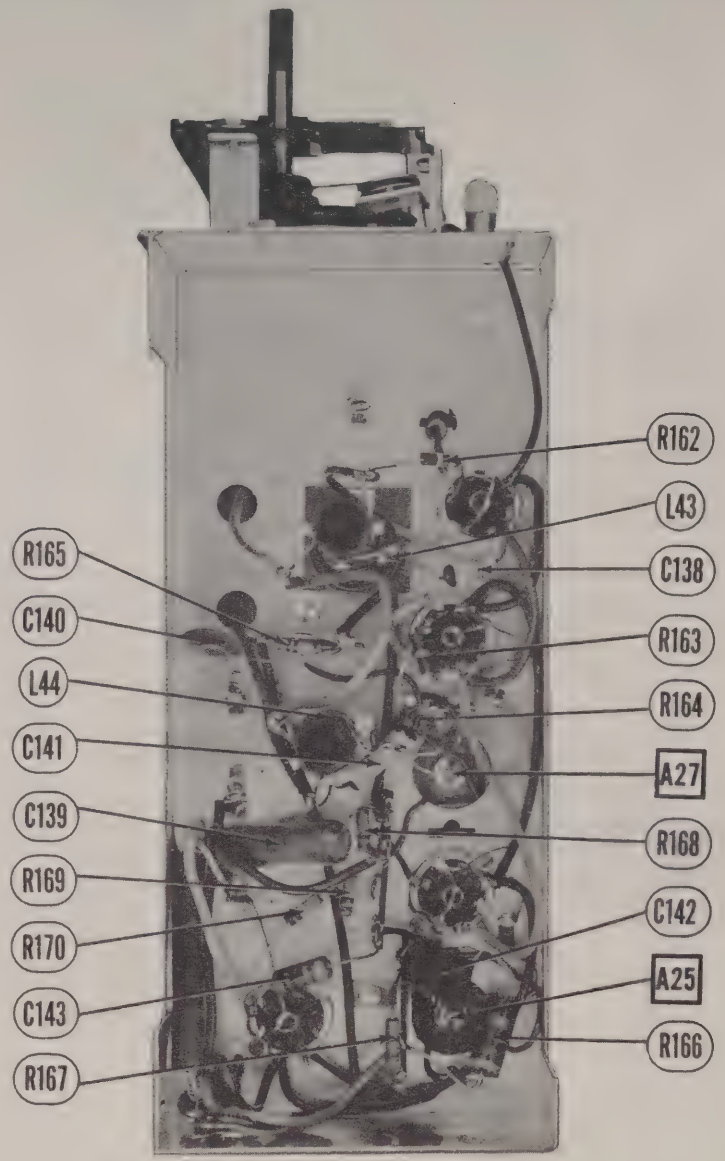
CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



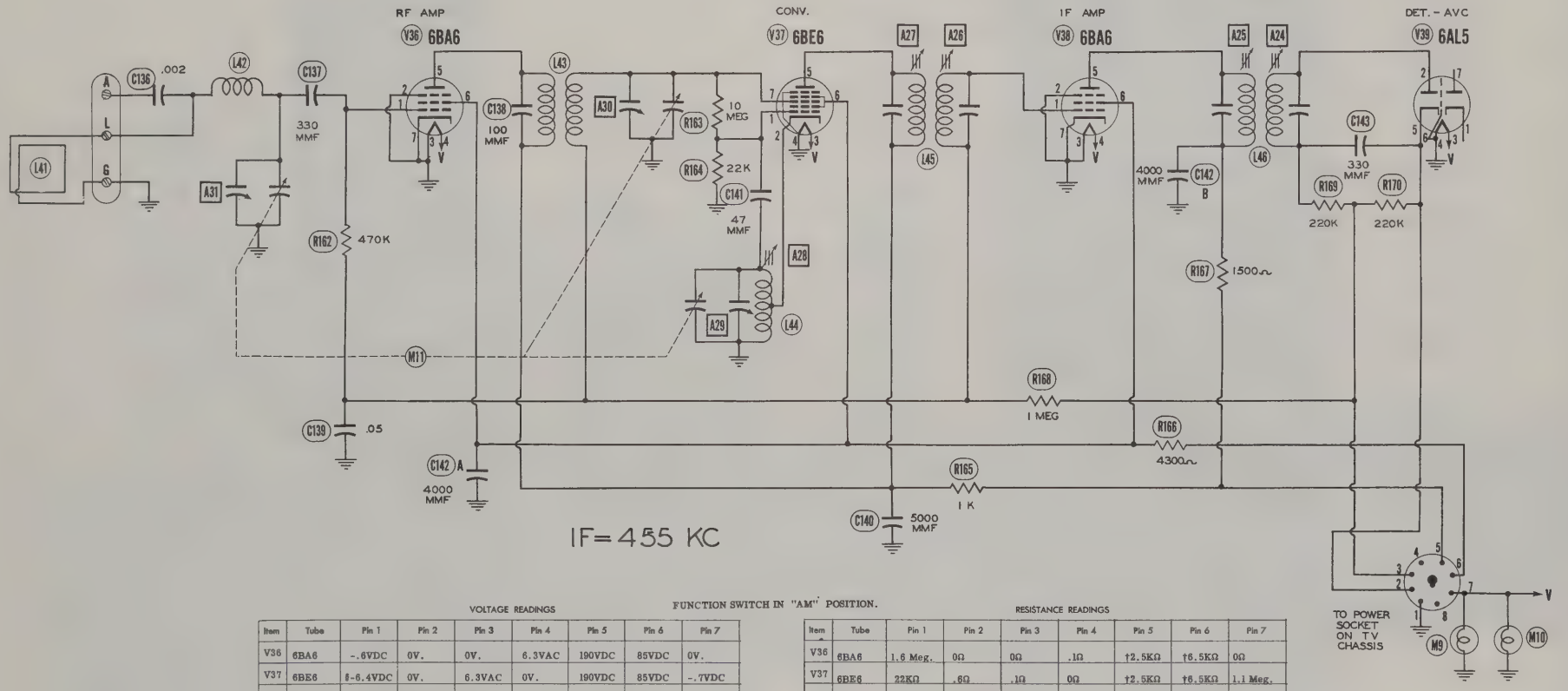
CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RADIO TUNER - TOP VIEW



RADIO TUNER - BOTTOM VIEW



VOLTAGE READINGS — FUNCTION SWITCH IN "AM" POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V36	6BA6	-.6VDC	0V.	0V.	6.3VAC	190VDC	85VDC	0V.
V37	6BE6	§-6.4VDC	0V.	6.3VAC	0V.	190VDC	85VDC	-.7VDC
V38	6BA6	-.7VDC	0V.	0V.	6.3VAC	190VDC	85VDC	0V.
V39	6AL5	0V.	-.5VDC	6.3VAC	0V.	0V.	0V.	0V.

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V36	6BA6	1.6 Meg.	0Ω	0Ω	.1Ω	†2.5KΩ	†6.5KΩ	0Ω
V37	6BE6	22KΩ	.8Ω	.1Ω	0Ω	†2.5KΩ	†6.5KΩ	1.1 Meg.
V38	6BA6	1.1 Meg.	0Ω	0Ω	.1Ω	†3KΩ	†6.5KΩ	0Ω
V39	6AL5	Inf.	370KΩ	.1Ω	0Ω	0Ω	0Ω	Inf.

† MEASURED FROM PIN 2 OF V34.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RADIO TUNER SCHEMATIC

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		DUMONT PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	25000190	6J6	7BF	
V2	Mixer	25000180	6AK5	7BD	
V3	Oscillator	25001760	6AB4	5CE	
V4	1st Video IF	25000050	6AU6	7BK	
V5	2nd Video IF	25000050	6AU6	7BK	
V6	3rd Video IF	25000050	6AU6	7BK	
V7	4th Video IF	25000050	6AU6	7BK	
V8	Video Det. -DC Rest.	25000020	6AL5	6BT	
V9	AGC Amp.	25000240	6BA6	7BK	
V10	AGC Det. -Sync. Det.	25000020	6AL5	6BT	
V11	AGC Clamp. -Hor. Disch.	25000110	6SN7GT	8BD	
V12	1st Video Amp.	25000240	6BA6	7BK	
V13	2nd Video Amp.	25000340	6AQ5	7BZ	
V14	1st Sound IF	25000050	6AU6	7BK	
V15	2nd Sound IF	25000050	6AU6	7BK	
V16	3rd Sound IF	25000050	6AU6	7BK	
V17	Sound Discr.	25000020	6AL5	6BT	
V18	Tuning Indicator	25000200	6AL7GT	8CH	
V19	AF Amp.	25000130	12AU7	9A	
V20	Audio Output	25000090	6V6GT/G	7AC	
V21	Sync. Clipper	25000050	6AU6	7BK	
V22	Sync. Discr.	25000020	6AL5	6BT	
V23	Sync. Amp. -Vert. Osc.	25000110	6SN7GT	8BD	
V24	Vert. Amp.	25000110	6SN7GT	8BD	
V25A	Hor. Reactance		6BC5	7BD	Installed in set
B	Hor. Reactance	25000010	6AG5	7BD	Used as alternate
V26	Hor. Osc.	25000350	6AK6	7BK	
V27	Hor. Output	25000140	6BG6G	5BT	
V28	Hor. Output	25000140	6BG6G	5BT	
V29	Damper	25000830	6W4GT	4CG	
V30	Damper	25000830	6W4GT	4CG	
V31	HV Rect.	25001810	1X2	7CB	
V32	HV Rect.	25001810	1X2	7CB	
V33	LV Rect.	25000060	5U4G	5T	
V34	LV Rect.	25000060	5U4G	5T	
V35	Picture Tube	25000870	19AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	60	450	03017880	AF66J		UP3345		TVL-1727	Filter
C2A	40	450	03018670	AF888J		UPT450-440V2		TVL-3813	◓ Filter ■ Decoupling ▲ Vert. Output Cath.
B	40	350							
C	25	50							
C3A	10	450	03018610	AF222J5A		UPT11145		TVL-4723	◓ Output Decoupling
B	10	450				C10		TVA-1205	■ Decoupling
C	10	300							▲ Decoupling
D	50	25							Output Cath. Byp.
C4	40	350	03018680	AF8J		UP4035		TVL-1621	Decoupling
C5A	30	450	03019330	UP33J2G		UP3145			■ Filter
B	10	150							Sync. Clipper Dec.
C6A	10	450	03019150	AF2222J		UPT11145		TVL-4760	◓ Decoupling
B	10	450							■ Low Pass Filter
C	10	450							▲ 2nd V. Amp. Screen
D	10	450							1st V. Amp. Screen
C7	50	25	03000020	PRS25/50		BR502A		TVA-1206	Filter
C8	10	25	03016730	PRS25/10		BR102A		TVA-1204	Bias Filter
C9	25	25	03015310	PRS25/25		BR252A		TVA-1205	Bias Filter †
C10	25	25	03015310	PRS25/25		BR252A		TVA-1205	2nd AF Amp. Cath.
C11	8	250		PRS250/8		BR825		TVA-1503	Decoupling
C12	10	300	03019320	PRS350/10		BR1235A		TVA-1604	Hor. React. Screen
C13	1.75 @ 60 ∿	850							Power Trans. Shunt
C14	20		03015790	SI20NPO	TCZ-20		NPOK-20		Fixed Trimmer
C15	15		03012050		TCZ-15		NPOK-15	19C5	Fixed Trimmer
C16	8-50		03017500				557-N750-8-50		Variable Trimmer
C17	20.		03012050	SI20NPO	TCZ-20		NPOK-20		Fixed Trimmer
C18	470		03016470	SI470	D6-471		GP2K-470	19C15	RF Cath. Bypass
C19	470		03016470	SI470	D6-471		GP2K-470	19C15	AGC Filter
C20	470		03016470	SI470	D6-471		GP2K-470	19C15	AGC Filter
C21	470		03016470	SI470	D6-471		GP2K-470	19C15	RF Bypass
C22	100		03016700	SI100	D6-101		GP1K-100	19C11	RF Coupling
C23	.5-5		03016650				532-08-.5-5		Variable Trimmer
C24	.5-5		03016650				532-08-.5-5		Variable Trimmer
C25	100		03016700	SI100	D6-101		GP1K-100	19C11	Fixed Trimmer
C26	125		03018020						Fixed Trimmer
C27	100		03016700	SI100	D6-101		GP1K-100	19C11	RF Coupling
C28	5000		03015610	BPD-005	DD-502		811-005	29C1	Mixer Screen Byp.
C29	470		03016470	SI470	D6-471		GP2K-470	19C15	AGC Filter
C30	470		03016470	SI470	D6-471		GP2K-470	19C15	AGC Filter
C31	1		03012150		TCZ-1				Osc. Coupling
C32	5		03014730	SI5NPO	TCZ-4.7		NPOK-5		Osc. Grid Cap.
C33	1.5-7		03016870				TS2A-N300-1.5-7		Variable Trimmer
C34	5000		03015610	BPD-005	DD-502		811-005	29C1	RF Bypass
C35	470		03016470	SI470	D6-471		GP2K-470	19C15	Filament Bypass
C36	470		03016470	SI470	D6-471		GP2K-470	19C15	Filament Bypass
C37	470		03016470	SI470	D6-471		GP2K-470	19C15	Mixer Fil. Bypass
C38	470		03016470	SI470	D6-471		GP2K-470	19C15	Osc. Fil. Bypass
C39	.05	200	03000950	P288-05	DF-503	PTE4S5			AGC Filter
C40	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C41	.05	200	03000950	P288-05	DF-503	PTE4S5			AGC Filter

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C42A	4000		03017790	BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	1st V. IF Dec.
B	4000					1D5D4			1st V. IF Screen
C43	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C44A	4000		03017790	BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	2nd V. IF Dec.
B	4000					1D5D4			2nd V. IF Screen
C45A	4000		03017790	BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	3rd V. IF Dec.
B	4000					1D5D4			3rd V. IF Screen
C46	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Cath.
C47	110	500	03020980	1469-0001	TCZ-110	5R5T1	NPOM-100	MS-31	Fixed Trimmer
C48	20		03013800	SI20NPO	TCZ-20	5R5Q2	NPOK-20	MS-42	Fixed Trimmer
C49A	4000		03017790	BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	4th V. IF Dec.
B	4000					1D5D4			4th V. IF Screen
C50	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	4th V. IF Cath.
C51	10		03013080	SI10NPO	TCZ-10	5R5Q1	NPOK-10	19C3	V. Diode Filter
C52A	4000		03017790	BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	RF Bypass
B	4000					1D5D4			RF Bypass
C53	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Amp. Plate Dec.
C54	820	500	03033530	1467-001	D6-102	1WST8	GP2L-001	1FM-21	AGC Amp. Screen
C55	.05	300	03000950	P288-05	DF-503	PTE4S5		TM-15-2	AGC Amp. Cath.
C56	150	500	03021650	1468-00015	D6-151	5W5T15	GP1K-150	1FM-315	AGC Filter
C57	1000		03013810	SI100	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C58	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C59	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C60	47		03015300	SI47NPO	TCZ-47	5R5Q5	NPOM-50	29C14	Fixed Trimmer
C61	.25	600	03018740	684-25		GT6P25		TM-2	Video Coupling
C62	.005	600	03018620	P688-005	D6-502	PTE6D5	811-005	TM-25	2nd V. Amp. Cath.
C63	.1	600	03014820	P688-1	DF-104	PTE6P1		TM-1	Video Coupling
C64	.047	300	03018370	P288-047	DF-503	PTE4S5		TM-15-2	Video Coupling
C65	.1	400	03019260	P488-1	DF-104	PTE4P1		TM-1-4	Pic. Tube Cath.
C66	.01	600	03014810	P688-01	D6-103	PTE6S1	811-01	TM-11	Pic. Tube Anode Byp.
C67	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C68	5		03014610	SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	S. IF Coupling *
C69	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	1st S. IF Plate Dec.
C70	1500	500	03033560	1467-0015	D6-152	1W5D15	GP2L-0015	1FM-215	1st S. IF Screen
C71	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C72	10		03013080	SI10	D6-100	5W5Q1	GP1K-10	19C19	S. IF Coupling *
C73	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	2nd S. IF Plate Dec.
C74	1500		03033560	1467-0015	D6-152	1W5D15	GP2L-0015	1FM-215	2nd S. IF Screen
C75	10		03013080	SI10	D6-100	5W5Q1	GP1K-10	19C19	S. IF Coupling
C76	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C77	.05	300	03000950	P288-05	DF-503	PTE4S5		TM-15-2	AVC Filter
C78	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	Limiter Plate Dec.
C79	1500	500	03033560	1467-0015	D6-152	1W5D15	GP2L-0015	1FM-215	Limiter Screen
C80	.68		03016895						Balancing
C81	47		03015300	SI47	D6-470	5W5Q5	GP1K-47	19C25	RF Bypass
C82	.05	200	03000950	P288-05	DF-503	PTE4S5		TM-15-2	Tuning Ind. Filter
C83	470		03014420	SI470	D6-471	5W5T5	GP2K-470	19C15	De-emphasis
C84	.02	400	03001460	P488-02	DF-203	PTE4S2		TM-12-4	Audio Coupling
C85	220	500	03020470	1468-0022	D6-221	5W5T25	GP2K-220	19C13	Tone Comp.
C86	.01	600	03001450	P688-01	D6-103	PTE6S1	811-01	TM-11	Tone Comp.
C87	.02	400	03018470	P488-02	DF-203	PTE4S2		TM-12-4	Tone Comp.
C88	.1	200	03013910	P288-1	DF-104	PTE4P1		TM-1-2	Bias Filter
C89	.02	400	03001460	P488-02	DF-203	PTE4S2		TM-12-4	Audio Coupling
C90	.01	600	03001450	P688-01	D6-103	PTE6S1	811-01	TM-11	Audio Coupling §
C91	.002	600	03014670	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Tone Comp.
C92	.005	600	03018620	P688-005	D6-502	PTE6D5	811-005	TM-25	Tone Comp.
C93	.05	600	03015370	P688-05	DF-503	PTE6S5		TM-15	Audio Coupling
C94	33		03018890	SI33	D6-330	5W5Q4	GP1K-33	19C24	RF Bypass
C95	.1	200	03014780	P288-1	DF-104	PTE4P1		TM-1-2	Sync. Coupling
C96	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	Sync. Clipper Dec.
C97	.1	200	03014780	P288-1	DF-104	PTE4P1		TM-1-2	Sync. Coupling
C98	.002	600	03014430	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Integrator Net.
C99	.005	400	03018640	P488-005	D6-502	PTE6D5	GP2M-005	TM-25-4	Integrator Net.
C100	.02	400	03015940	P488-02	DF-203	PTE4S2		TM-12-4	Integrator Net.
C101	10000	500	03033420	1467-01	D6-103	1D3S1	811-01	1FM-11	Vert. Osc. Grid
C102	.1	600	03019250	P688-1		PTE6P1			Vert. Discharge
C103	.05	600	03019160	P688-05		PTE6S5		TM-15	Vert. Discharge
C104	.1	600	03014820	P688-1	DF-104	PTE6P1		TM-1	Vert. Sweep Coupling
C105	100	500	03020430	1468-0010	D6-101	5W5T1	GP1K-100	1FM-31	Hor. Sync. Coupling
C106	20		03015790	SI20NPO	TCZ-20	5R5Q2	NPOK-20	MS-42	Balancing
C107	12000	500	03018240						Fixed Trimmer
C108	.005	600	03018620	P688-005	D6-502	PTE6D5	811-005	TM-25	AFC Filter
C109	.1	600	03013910	P688-1	DF-104	PTE6P1		TM-1	AFC Filter
C110	10000	500	03034420	1467-01	D6-103	1D3S1	811-01	1FM-11	Phase Shifter
C111	.005	600	03018620	P688-005	D6-502	PTE6D5	811-005	TM-25	Hor. AFC Coupling
C112	.05	600	03015370	P688-05	DF-503	PTE6S5		TM-15	RF Bypass
C113	.002	600	03018650	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Hor. Osc. Grid
C114	.05	600	03015370	P688-05	DF-503	PTE6S5		TM-15	Hor. Osc. Screen
C115	330	500	03020490	SI330	D6-331	5W5T3	GP2K-330	1FM-335	Differentiator Net.
C116	.01	400	03001450	P488-01	D6-103	PTE4S1	811-01	TM-11-4	Hor. Sweep Coup.
C117	.1	600	03019250	P688-1	DF-104	PTE6P1		TM-1	Hor. Osc. Dec.
C118	.2	1000	03018750	1084-2		GT6P2			RF Bypass
C119	1000	500	03029440	1467-001	D6-102	1W5D1	GP2L-001	1FM-21	Hor. Discharge
C120	.01	600	03012560	P688-01	D6-103	PTE6S1	811-01	TM-11	Hor. Sweep Coup.
C121	.1	600	03019250	P688-1	DF-104	PTE6P1		TM-1	Hor. Output Screen
C122	.25	200	03000420	P488-25		GT2P25		TM-2-2	Hor. Output Cath.
C123	.1	200	03018720	P288-1	DF-104	PTE4P1		TM-12	Damper Filter
C124	.03	200	03018580	P488-03		PTE6S3		TM-13	Damper Filter
C125	220	2000	03016940						Fixed Trimmer
C126	220	2000	03016940						Fixed Trimmer
C127	.5	400	03019650	.484-5		GT4P5		TM-5-4	Hor. Sweep Coup.
C128	500	10000	03014410	HV10A	TV1-501				Voltage Doubler Cap.
C129	500	10000	03014410	HV10A	TV1-501				HV Filter
C130	500	10000	03014410	HV10A	TV1-501				HV Filter
C131	1.7		03016896						S. IF Coupling
C132	.02	600	03018570	P488-02	DF-203	PTE6S2		TM-12	Line Filter †
C133	.02	600	03018570	P488-02	DF-203	PTE6S2		TM-12	Line Filter †
C134	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	IF Coupling
C135	.002	600	03018650	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Output Plate Byp. *

* Not used on all models.
† Some models use .1MFD in this application. Mfgr's Part No. 03013910.
‡ Some models use .05MFD in this application. Mfgr's Part No. 03016500.
§ Some models use .02MFD in this application. Mfgr's Part No. 03018570.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	01028700	Concentrikit B13-133 †	RTV-151		Bass tone control-front
B	750KΩ	½		B13-137 †			Treble tone control-rear
C	Shaft End			E-202 †			Attach per instr. in "Concentrikit".
R2	1500Ω	25	01028100		RTV-177		Focus control-Wire Wound
R3A	100KΩ	½	01027200	QU-128	AM-49-S	B-40	Brightness control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R3A per instructions
R4	1500Ω	2	01028400		RTV-178	V-130	Contrast control
R5A	500KΩ	½	01025700		AT-92		Volume control tapped at 250KΩ & 150KΩ
B	Shaft		Not Req.		FS-3		Attach to R5A per instructions
C	Switch		Not Req.		SW-A		Attach to R5A per instructions
R6A	10KΩ	½	01009630	QU-116	AG-37-S	AN-14	Horiz. Drive control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7A	4 Meg.	½				AN-86	Vert. size control
B	Shaft					AK-1	Attach to R7A per instructions
R8	1500Ω	2	01026500	WK-1500	RTV-23	VK-130	Vert. linearity control
R9A	1 Meg.	½	01007520	QU-137	AG-61-S	AN-69	Vert. hold control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R9A per instructions
R10A	25KΩ	½	01009620	QU-120	AG-40-S	B-26 *	AGC control
B	Shaft		Not Req.	RQ	FSK-1/4	Not Req.	Attach to R10A per instructions
R11A	500KΩ	½	01007400	QU-133	AG-58-S	B-59 *	CRT sensitivity control
B	Shaft		Not Req.	RQ	FKS-1/4	Not Req.	Attach to R11A per instructions

† Additional parts to be used with "Concentrikit".
* File slot in shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R12	82Ω	½	02031640	BTS-82	RF Amp. Cathode
R13	100KΩ	½	02032010		AGC Network
R14	10KΩ	2	02037890		RF Amp. Plate Load
R15	12KΩ	½	02031900		Conv. Coil Shunt
R16	100KΩ	½	02032010		AGC Network
R17	1 Meg.	½	02032130		Conv. Grid
R18	150KΩ	½	02032030		Conv. Screen
R19	10KΩ	2	02037890		Osc. Plate Load
R20	12KΩ	½	02031900		Osc. Grid
R21	10KΩ	½	02031890	BTS-10K	AGC Net work
R22	1.2 Meg.	½	02032140	BTS-1.2 Meg.	AGC Network
R23	39Ω	½	02031600		1st Video IF Amp. Cathode
R24	22KΩ	½	02031930		1st Video IF Amp. Screen
R25	3300Ω	1	02034830	BTA-3300	1st Video IF Amp. Plate Decoupling
R26	10KΩ	½	02031890	BTS-10K	AGC Network
R27	39Ω	½	02031600		2nd Video IF Amp. Cathode
R28	68KΩ	1	02034990		2nd Video IF Amp. Screen
R29	3300Ω	1	02034830	BTA-3300	2nd Video IF Amp. Plate Decoupling
R30	120Ω	½	02031680	BTS-120	3rd Video IF Amp. Cathode
R31	1000Ω	½	02031770	BTS-1000	3rd Video IF Amp. Screen
R32	1000Ω	½	02031770	BTS-1000	3rd Video IF Amp. Plate Decoupling
R33	6800Ω	½	02031870		4th Video IF Amp. Grid
R34	120Ω	½	02031680	BTS-120	4th Video IF Amp. Cathode
R35	1000Ω	½	02031770	BTS-1000	4th Video IF Amp. Screen
R36	1000Ω	½	02031770	BTS-1000	4th Video IF Amp. Plate Decoupling
R37	10KΩ 45%	½	02030720	BTS-10K-5%	Video Det. Diode Load
R38	10KΩ 5%	½	02030720	BTS-10K-5%	1st Video Amp. Grid
R39	33Ω	½	02031590	BW-½-33	1st Video Amp. Cathode
R40	56KΩ	2	02037980	BTB-56K	1st Video Amp. Screen
R41	2700Ω 5%	½	02030580	BTS-2700-5%	1st Video Amp. Plate Load
R42	3300Ω	1	02034830	BTA-3300	1st Video Amp. Plate Decoupling
R43	100KΩ	½	02032010	BTS-100K	2nd Video Amp. Grid
R44	33Ω	½	02031590	BW-½-33	2nd Video Amp. Cathode
R45	27KΩ	1	02034940	BTA-27K	2nd Video Amp. Screen
R46	2250Ω	10	02122470	1 3/4A-2250	2nd Video Amp. Plate Load-Wire Wound
R47	1500Ω	2	02037790	BTB-1500	Decoupling
R48	1500Ω	2	02037790	BTB-1500	Decoupling
R49	10KΩ	½	02031890	BTS-10K	Isolation
R50	270KΩ	½	02032060	BTS-270K	Picture Tube Grid
R51	1 Meg.	½	02032130	BTS-1 Meg.	DC Restorer Load
R52	220KΩ	½	02032050	BTS-220K	Voltage Divider
R53	560KΩ	½	02032100	BTS-560K	Voltage Divider
R54	100KΩ	½	02032010	BTS-100K	AVC Network
R55	47KΩ	½	02031970	BTS-47K	1st Sound IF Transformer Shunt
R56	120Ω	½	02031680	BTS-120	1st Sound IF Cathode
R57	4700Ω	½	02031850	BTS-4700	1st Sound IF Screen
R58	1000Ω	½	02031770	BTS-1000	1st Sound IF Plate Decoupling
R59	100KΩ	½	02032010	BTS-100K	AVC Network
R60	100KΩ	½	02032010	BTS-100K	2nd Sound IF Transformer Shunt
R61	150Ω	½	02031670	BTS-150	2nd Sound IF Cathode
R62	4700Ω	½	02031850	BTS-4700	2nd Sound IF Screen
R63	1000Ω	½	02031770	BTS-1000	2nd Sound IF Plate Decoupling
R64	100KΩ	½	02032010	BTS-100K	3rd Sound IF Transformer Shunt
R65	1.2 Meg.	½	02032140	BTS-1.2 Meg.	AVC Network
R66	270KΩ	½	02032060	BTS-270K	3rd Sound IF Grid
R67	150Ω	½	02031670	BTS-150	3rd Sound IF Cathode
R68	22KΩ 5%	½	02031930	BTS-22K-5%	3rd Sound IF Screen-See Note 1
R69	1000Ω	½	02031770	BTS-1000	3rd Sound IF Plate Decoupling
R70	100KΩ	½	02032010	BTS-100K	Disc. Diode Load
R71	100KΩ	½	02032010	BTS-100K	Disc. Diode Load
R72	100KΩ	½	02032010	BTS-100K	De-emphasis
R73	1.2 Meg.	½	02032140	BTS-1.2 Meg.	Tuning Eye Filter
R74	3300Ω	½		BTS-3300	Tuning Eye Cathode
R75	680KΩ	½	02042110	BTS-680K	Tone Compensation
R76	22KΩ	½	02031930	BTS-22K	Tone Compensation
R77	47KΩ	½	02031970	BTS-47K	Tone Compensation
R78	560KΩ	½	02032100	BTS-560K	1st AF Amp. Grid
R79	220KΩ	½	02032050	BTS-220K	1st AF Amp. Plate Load
R80	47KΩ	½	02031970	BTS-47K	Tone Compensation
R81	47KΩ	½	02031970	BTS-47K	Tone Compensation
R82	560KΩ	½	02032100	BTS-560K	Tone Compensation
R83	1500Ω	½	02031790	BTS-1500	2nd AF Amp. Cathode
R84	220KΩ	½	02032050	BTS-220K	2nd AF Amp. Plate Load
R85	5600Ω	½	02031860	BTS-5600	Decoupling
R86	390KΩ	½	02031100	BTS-390K	Feedback

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	IDENTIFICATION CODES
R87	270KΩ	½	02032060	BTS-270K	Output Grid
R88	470Ω	1	02034730	BTA-470	Output Cathode
R89	470Ω	1	02034730	BTA-470	Output Cathode
R90	1450Ω	7	02121300	1 3/4A-1450	Decoupling-Wire Wound
R91	68Ω	½	02031630		AGC Amp. Cathode
R92	270Ω	½	02031700	BTS-270	AGC Amp. Cathode
R93	1000Ω	½	02031770	BTS-1000	AGC Amp. Screen
R94	1000Ω	½	02031770	BTS-1000	AGC Amp. Plate Decoupling
R95	1000Ω	½	02031770	BTS-1000	Voltage Divider
R96	18KΩ	½	02031920	BTS-18K	Voltage Divider
R97	15KΩ	½	02031910	BTS-15K	AGC Network
R98	680KΩ	½	02042110	BTS-680K	AGC Network
R99	270KΩ	½	02032060	BTS-270K	AGC Network
R100	1.2 Meg.	½	02032140	BTS-1.2 Meg.	AGC Network
R101	10 Meg.	½	02032250	BTS-10 Meg.	Voltage Divider
R102	10KΩ	½	02031890	BTS-10K	Isolation
R103	1.2 Meg.	½	02032140	BTS-1.2 Meg.	Sync. Clipper Grid
R104	2200Ω	2	02037810	BTB-2200	Sync. Clipper Screen
R105	22KΩ	½	02031930	BTS-22K	Sync. Clipper Plate Load
R106	2200Ω	2	02037810	BTB-2200	Voltage Divider
R107	1.2 Meg.	½	02032140	BTS-1.2 Meg.	Sync. Amp. Grid
R108	4700Ω	½	02031850	BTS-4700	Sync. Amp. Plate Load
R109	10KΩ	½	02031890	BTS-10K	Integrator Network
R110	10KΩ	½	02031890	BTS-10K	Integrator Network
R111	10KΩ	½	02031890	BTS-10K	Integrator Network
R112	220KΩ	½	02032050	BTS-220K	Vert. Osc. Grid
R113	820KΩ	½	02031180	BTS-820K	Vert. Osc. Plate Load
R114	220KΩ	1	02035050	BTA-220K	Bleeder
R115	220KΩ	1	02035050	BTA-220K	Bleeder
R116	2700Ω 5%	½	02030580	BTS-2700-5%	Vert. Peaking-See Note 2
R117	1 Meg.	½	02032130	BTS-1 Meg.	Vert. Output Grid
R118	560Ω	½	02031740	BTS-560	Vert. Output Cathode-See Note 1
R119	6800Ω	2	02037870	BTB-6800	Vert. Output Decoupling
R120	6800Ω	2	02037870	BTB-6800	Vert. Output Decoupling
R121	220KΩ	½	02032050	BTS-220K	Vert. Output Transformer Shunt-See Note 3
R122	470KΩ	½	02032090	BTS-470K	Sync. Disc. Diode Load
R123	470KΩ	½	02032090	BTS-470K	Sync. Disc. Diode Load
R124	470KΩ	½	02032090	BTS-470K	Horiz. AFC Filter
R125	470Ω	½	02031730	BTS-470	Horiz. AFC Grid
R126	22Ω	½	02031570	BW-½-22	Horiz. AFC Cathode
R127	68KΩ	2	02037990	BTB-68K	Horiz. AFC Screen
R128	22KΩ	2	02037930	BTB-22K	Horiz. AFC Plate Load
R129	27KΩ	1	02034940	BTA-27K	Voltage Divider
R130	220KΩ	½	02032050	BTS-220K	Horiz. Osc. Grid
R131	47KΩ	1	02034970	BTA-47K	Horiz. Osc. Screen
R132	7500Ω	5	02112370	1 3/4A-7500	Hor. Osc. Plate Load-Wire Wound
R133	6800Ω	½	02030680	BTS-6800	Differentiator
R134	220KΩ	½	02032050	BTS-220K	Hor. Discharge Grid
R135	82KΩ	1	02035000	BTA-82K	Hor. Discharge Plate Load
R136	68KΩ	1	02034990	BTA-68K	Hor. Discharge Plate Load
R137	1000Ω	½	02031770	BTS-1000	Hor. Peaking
R138	120Ω	½	02031660		Parasitic Suppressor
R139	120Ω	½	02031660		Parasitic Suppressor
R140	470KΩ	½	02032090	BTS-470K	Hor. Output Grid
R141	80Ω	5	02112530		Hor. Output Cathode-Wire Wound
R142	5000Ω	10	02122550	1 3/4A-5000	Hor. Output Screen-Wire Wound
R143	68Ω	½	02031630		Parasitic Suppressor
R144	68Ω	1	02034630		Parasitic Suppressor
R145	68Ω	½	02031630		Parasitic Suppressor
R146	68Ω	1	02034630		Parasitic Suppressor
R147	1.5Ω	½	02100690		HV Rect. Filament
R148	1.5Ω	½	02100690		HV Rect. Filament
R149	470KΩ	2	02038090		HV Rect. Load
R150	470KΩ	2	02038090		HV Rect. Load
R151	470KΩ	2	02038090		HV Rect. Load
R152	470KΩ	2	02038090		HV Rect. Load
R153	3000Ω	10	02113030	1 3/4A-3000	Width Coil Shunt-Wire Wound
R154	270KΩ	½	02032060	BTS-270K	Bias Network
R155	33KΩ	½	02031950	BTS-33K	Bias Network
R156	220KΩ 5%	½	02031040	BTS-220K-5%	Bias Network
R157	10KΩ	½	02031890	BTS-10K	Bias Network
R158A	850Ω	2	02121400		Focus Coil Shunt-Wire Wound
B	1200Ω	2			Voltage Divider-Wire Wound
C	1975Ω	2			Voltage Divider-Wire Wound
R159A	90Ω	11	02121500		Bias Network-Wire Wound
B	56Ω	3			Bias Network-Wire Wound
R160	100KΩ	½	02035540	BTA-100K	Line Isolation
R161	100KΩ	½	02032010	BTS-100K	Tone Compensation-See Note 3

Note 1. Some models use 1000Ω resistor in this application. Mfgr's Part No. 02031770.
Note 2. Some models use 4300Ω resistor in this application. Mfgr's Part No. 02030630.
Note 3. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.7A	740VCT .390ADC	5VAC @ 6A	12.6VCT @ 5.7A	20004961			

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T2	117VAC @ .2A	6.3VAC @ 2.4A			20004811			

TV PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T3	170Ω	950Ω	20004722	A-8122	A-4000 ①	TBO-2	Vert. Block Osc. Trans.
T4	200Ω Tap ⓐ . 20Ω	22Ω Tap ⓐ 4.5Ω	20004941				Hor. Output Trans.
		SEC. 2 0Ω					
		SEC. 3 0Ω					
T5	590Ω	7Ω	20004732	A-8112 ①	A-3035 ①	TSO-5 ①	Vert. Output Trans.
T6A	14Ω		21005541	DY-7	MD-70F		Hor. Deflection Coil
B	65Ω						Vert. Deflection Coil
T7	1300Ω Tap ⓐ 770Ω		21005451				Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T8	6500Ω	4.2Ω	400Ω	.5Ω	Part of SP1	A-3824	A-3020 ①	RO-201 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA DUMONT PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	4.2Ω	18002791		10A4A ②	② Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	9 1/2"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.390ADC	46Ω	2.5 Henries	21005212				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA DUMONT PART No.	MEISSNER PART No.	NOTES
L2	Ant. Trans.	0Ω	0Ω	20004592		
L3	Bandpass Coupling	0Ω		21004671		
L4	Ant. Coil	0Ω				Part of tuner, #89003002.
L5	Ant. End Inductor	0Ω		21005721		
L6	Ant. Coil	0Ω		21005741		
L7	RF End Inductor	0Ω		21005722		
L8	RF Coil	0Ω				Part of tuner #89003002.
L9	Band Pass	0Ω		21005731		
L10	Mixer Grid End Inductor	0Ω		21005722		
L11	Mixer Grid	0Ω				Part of tuner #89003002.
L12	Band Pass	0Ω		21005521		Not used in all models.
L13	Osc. End Inductor	0Ω		21005111		
L14	Osc. Coil	0Ω				Part of tuner #89003002.
L15	Osc. Shunt	0Ω		21005131		
L16	RF Choke	0Ω		21005421		
L17	Fil. Choke	0Ω		21005421		
L18	Fil. Choke	0Ω		21005421		
L19	Conv. Trans.	47K	.1Ω	20004951		
L20	1st Video IF	.1Ω	.5Ω	20004701		
L21	2nd Video IF	.7Ω	.7Ω	20004711		
L22	3rd Video IF	.7Ω	.7Ω	20004741		
L23	4th Video IF	.4Ω	.4Ω	20004751		
L24	5th Video IF	.7Ω	.5Ω	20004761		
L25	Peaking	1.6Ω		21004465		Orange dot
L26	Peaking	6Ω		21004463		White dot
L27	Peaking	5.5Ω		21004653		Red-Gray dots
L28	4.5MC Trap	2.5Ω		21004831		
L29	Peaking	4Ω		21004654		Red-Black dots
L30	1st Sound IF	.2Ω	.2Ω	20004511		
L31	2nd Sound IF	.2Ω	.2Ω	20004511		
L32	3rd Sound IF	.2Ω	.2Ω	20004511		
L33	Disc. Trans.	.2Ω	.3Ω	20004441		
L34	Sync. Det. Trans.	.1Ω	.1Ω	20004671		
L35	Sync. Disc. Trans.	64Ω	68Ω	20003923		
L36	Horiz. Lin.	7.5Ω		21005491		Tap at 3.2Ω
L37	Horiz. Size	17Ω		21004341		
L38	Fil. Choke	0Ω		21005601		
L39	Fil. Choke	0Ω		21005601		Not used in all models.
L40	Sound Trap	.2Ω		21004801		Red-White dots

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA DUMONT PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	12001310		Type #47
M2	Bayonet	6-8	.15	Brown	12001310		Type #47

TV PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	DUMONT PART No.	NOTES
M3	RF Tuner	89003002	
M4	Fuse	11000810	5A 250V Type MTH
M5	Fuse	11001100	.25A 250V Type 3AG
M6	Switch	05003891	Function
M7	Ion Trap	21004473	
	Safety Glass	45001461	
	Dial Plate	45001381	Winslow, Hanover, Mahogany
	Dial Plate	45001382	Winslow, Hanover, Blonde
	Dial Plate	45001701	Sherbrooke, Mahogany
	Dial Plate	45001702	Sherbrooke, Blonde
	Dial	45001941	Sherbrooke AM
	Knob	45001371	Dial Venier, Mahogany
	Knob	45001372	Dial Venier, Blonde
	Knob	45001551	Tuning, Mahogany
	Knob	45001552	Tuning, Blonde
	Knob	45001931	Tone, Mahogany
	Knob	45001932	Tone, Blonde
	Knob	45002241	Sherbrooke, Mahogany, AM Tuning
	Knob	45002242	Sherbrooke, Blonde, AM Tuning
	Knob	45001872	Control, Sherbrooke, Mahogany
	Knob	45001875	Control, Sherbrooke, Blonde
	Knob	45001877	Control, Winslow, Hanover Mahogany
	Knob	45001878	Control, Winslow, Hanover Blonde

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DUMONT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V36	RF Amp.	25000240	6BA6	7BK	
V37	Converter	25000250	6BE6	7CH	
V38	IF Amp.	25000240	6BA6	7BK	
V39	DET.-AVC-AF	25000020	6AL5	6BT	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C136	.002	600	03014670	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Ant. Coupling
C137	330		03014390	SI330	D6-331	5W5T3	GP2K-330	1FM-335	RF Coupling
C138	100		03014380	SI100	D6-101	5W5T1	GP1K-100	1FM-31	Fixed Trimmer
C139	.05	200	03000950	P288-05	DF-503	PTE4S5		TM-15-2	AVC Filter
C140	5000		03015610	BPD-005	DD-502	1D5D5	811-005	29C1	Decoupling
C141	47		03012730	SI47	D6-470	5W5Q5	GP1K-47	1FM-45	Osc. Grid Cap.
C142A	4000		03017790	BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	Decoupling
B	4000					1D5D4			IF Plate Decoup.
C143	330		03014390	SI330	D6-331	5W5T3	GP2K-330	1FM-335	Diode RF Filter

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DUMONT PART No.	IRC PART No.	IDENTIFICATION CODES
R162	470KΩ	1/2	02032580	BTS-470K	RF Grid
R163	10 Meg.	1/2	02032660	BTS-10 Meg.	Conv. Grid
R164	22KΩ	1/2	02032500	BTS-22K	Osc. Grid
R165	1000Ω	1/2	02032420	BTS-1000	Decoupling
R166	4300Ω	2	02036630		Screen Dropping
R167	1500Ω	1/2	02032430	BTS-1500	IF Plate Decoupling
R168	1 Meg.	1/2	02032600	BTS-1 Meg.	AVC Network
R169	220KΩ	1/2	02032560	BTS-220K	Diode Filter
R170	220KΩ	1/2	02032560	BTS-220K	Diode Load

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: DUMONT PART No.	REPLACEMENT DATA: MEISSNER PART No.	NOTES
L41	Loop Ant.	.2Ω				
L42	Ant. Coil	9.5Ω		21004321		
L43	RF Coil	40Ω	11Ω	21004331		
L44	Osc. Coil	6.2Ω		21004311		Tap at .6Ω
L45	1st IF	16Ω	16Ω	20004044		
L46	2nd IF	16Ω	16Ω	20004044		

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA: DUMONT PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	REMARKS
M8		ACD-2J	A-1 A-3			

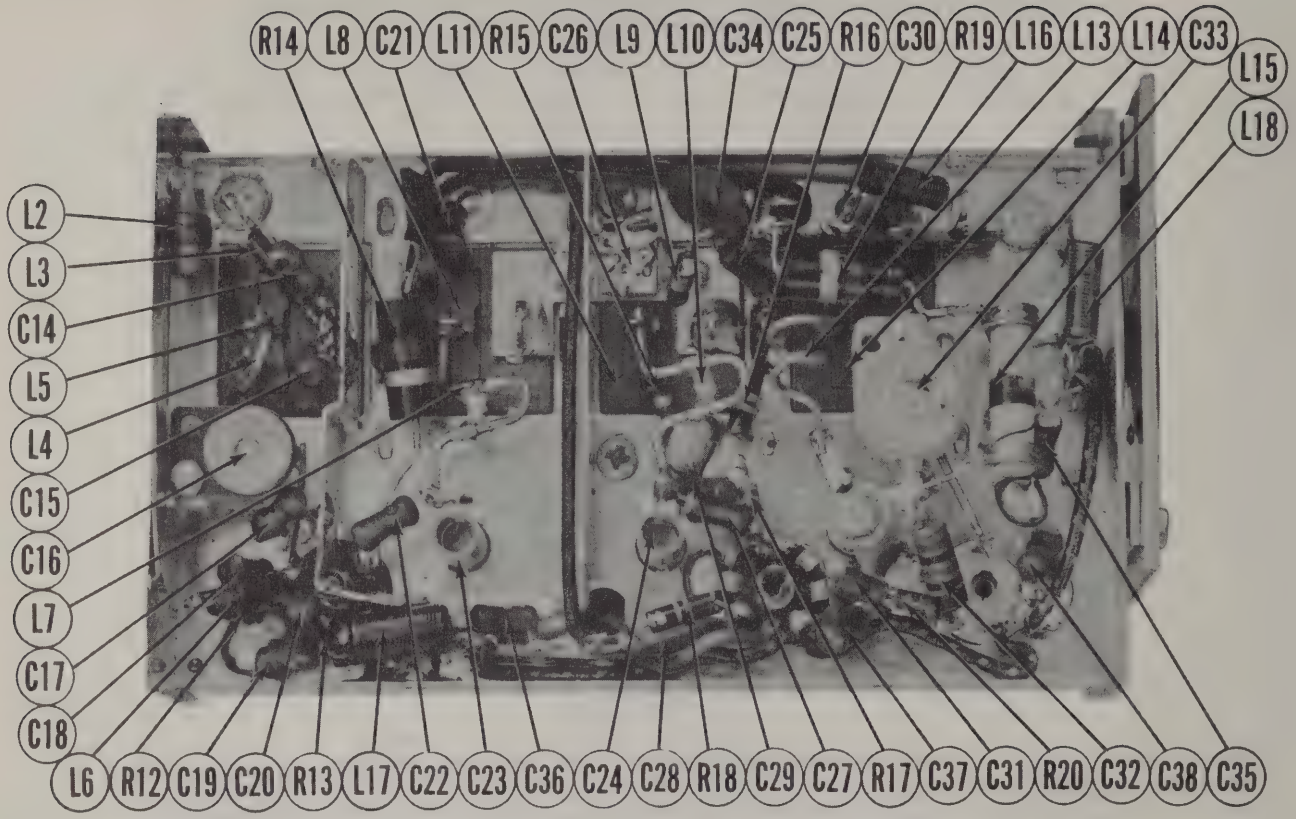
ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: DUMONT PART No.	REPLACEMENT DATA:	NOTES
M9	Bayonet	6-8	.2	White	12001370		Type #51
M10	Bayonet	6-8	.2	White	12001370		Type #51

MISCELLANEOUS

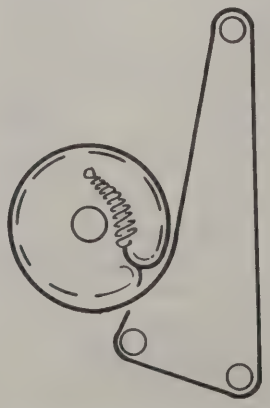
ITEM No.	PART NAME	DUMONT PART No.	NOTES
M11A	Tuning Cap.	03016112	AM Tuning (17-392MMF, 23-399MMF, 31-217MMF)
B	Tuning Cap.	03016123	AM Tuning



TV RF TUNER-BOTTOM VIEW

DISASSEMBLY INSTRUCTIONS

1. Remove nine push-on type control knobs.
2. Remove six wood screws from rear cover.
3. Remove rear cover from hinge.
4. Disconnect built-in antenna.
5. Remove antenna terminal strip.
6. Disconnect yoke leads.
7. Disconnect speaker leads.
8. Disconnect input power cable from phono to TV chassis.
9. Disconnect phono input to radio.
10. Remove five 7/16" hex head screws from bottom of FM and TV chassis.
11. Remove two 1/4" hex head screws from rear of AM radio chassis.
12. Remove phillips head screws from control panel of AM chassis. Remove chassis.



AM DIAL CORD STRINGING

TV ALIGNMENT INSTRUCTIONS (CONT.)

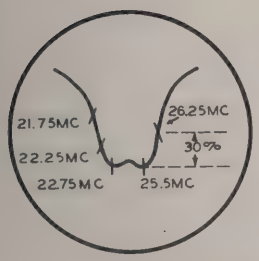


FIG.1

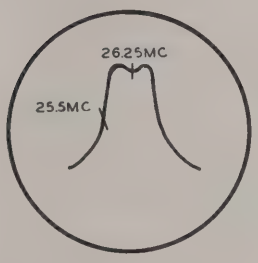


FIG.2

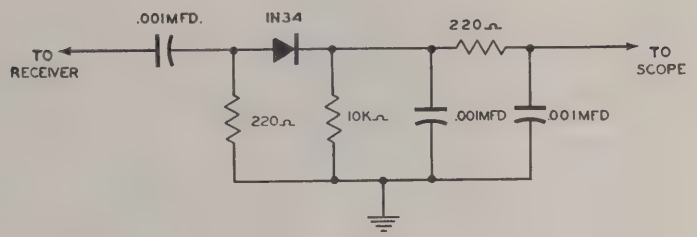


FIG.3

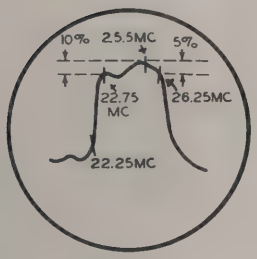


FIG.4

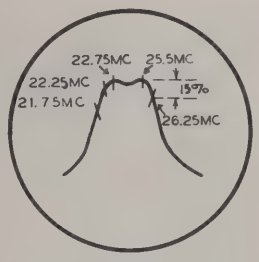


FIG.5

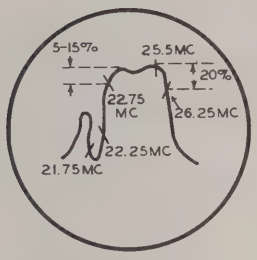


FIG.6

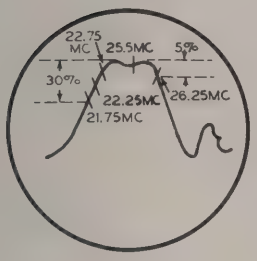


FIG.7

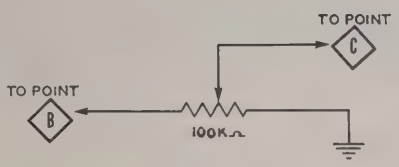


FIG.8

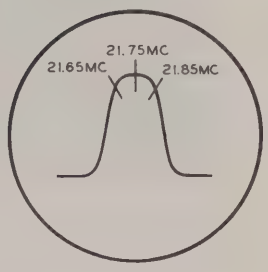


FIG. 9

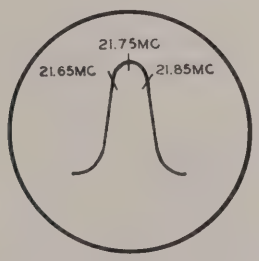


FIG.10

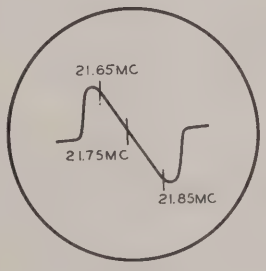


FIG.11

AM ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer 1 1/16" from top left hand edge of dial backing plate.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
14.	.01MFD	High side to pin 7 (Grid) of 6BE6 (V37). Low side to chassis.	455KC (400 ∿ Mod.)	AM (fully CCW)	Tuning gang fully open	Across voice coil	A24, A25, A26, A27	Adjust for maximum output.
15.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V36). Low side to chassis.	1600KC	"	1600KC	"	A28	"
16.	.01MFD	"	600KC	"	600KC	"	A29	Adjust for maximum output. Repeat steps 15 and 16 until no further improvement can be made.
17.	Direct	High side to antenna terminal. Low side to chassis.	1400KC	"	Tune for max. output	"	A30, A31	Adjust for maximum output.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	95VDC	95VDC	0V.	6.3VAC	-.4VDC	-.4VDC	.8VDC		
V 2	6AK5	-1.4VDC	0V.	0V.	6.3VAC	45VDC	50VDC	0V.		
V 3	6AB4	120VDC	0V.	0V.	6.3VAC	0V.	§-5.3VDC	0V.		
V 4	6AU6	-.1VDC	0V.	0V.	6.3VAC	300VDC	120VDC	.4VDC		
V 5	6AU6	-.1VDC	0V.	0V.	6.3VAC	300VDC	120VDC	.4VDC		
V 6	6AU6	0V.	0V.	0V.	6.3VAC	175VDC	140VDC	1.2VDC		
V 7	6AU6	0V.	0V.	0V.	6.3VAC	185VDC	140VDC	1.2VDC		
V 8	6AL5	0V.	0V.	0V.	6.3VAC	.8VDC	0V.	-.4VDC		
V 9	6BA6	0V.	0V.	0V.	6.3VAC	175VDC	140VDC	7.4VDC		
V 10	6AL5	80VDC 0V.	80VDC 0V.	0V.	6.3VAC	150VDC 9VDC	0V.	-15VDC		
V 11	6SN7GT	-46VDC	195VDC	-14VDC	-.6VDC	-.6VDC	0V.	0V.	6.3VAC	
V 12	6BA6	-.4VDC	0V.	0V.	6.3VAC	260VDC	215VDC	13VDC		
V 13	6AQ5	-8VDC	1VDC	6.3VAC	0V.	220VDC	250VDC	-9VDC		
V 14	6AU6	0V.	0V.	6.3VAC	0V.	185VDC	130VDC	.4VDC		
V 15	6AU6	0V.	0V.	6.3VAC	0V.	185VDC	130VDC	.4VDC		
V 16	6AU6	-.5VDC	0V.	6.3VAC	0V.	190VDC	100VDC	.6VDC		
V 17	6AL5	0V.	-1VDC	6.3VAC	0V.	17VDC	0V.	-1VDC		
V 18	6AL7GT	▲0V. ▲2.4VDC	6.3VAC	▲0V. ▲320VDC	0V.	0V.	0V.	0V.	▲0V. ▲2.4VDC	
V 19	12AU7	50VDC	0V.	2VDC	0V.	0V.	40VDC	-.5VDC	0V.	6.3VAC
V 20	6V6GT	0V.	0V.	235VDC	250VDC	0V.	0V.	6.3VAC	12VDC	
V 21	6AU6	-1VDC	0V.	0V.	6.3VAC	36VDC	45VDC	0V.		
V 22	6AL5	-1VDC	-8VDC	0V.	6.3VAC	-1.6VDC	0V.	-8VDC		
V 23	6SN7GT	-.7VDC	60VDC	0V.	-85VDC -33VDC	100VDC 3VDC	-14VDC	6.3VAC	0V.	
V 24	6SN7GT	-3VDC	400VDC	6VDC -.5VDC	-3VDC	400VDC	6VDC -.5VDC	6.3VAC	0V.	
V 25	6BC5	-.6VDC	0V.	0V.	6.3VAC	300VDC	100VDC	0V.		
V 26	6AK6	-25VDC	0V.	6.3VAC	0V.	240VDC	190VDC	0V.		
V 27	6BG6G	0V.	0V.	-1.8VDC	-35VDC	-34VDC	0V.	6.3VAC	230VDC	TOP CAP *
V 28	6BG6G	0V.	6.3VAC	-1.8VDC	230VDC	-34VDC	-34VDC	0V.	230VDC	TOP CAP *
V 29	6W4GT	0V.	0V.	470VDC	0V.	320VDC	0V.	*	*	
V 30	6W4GT	0V.	0V.	470VDC	0V.	320VDC	0V.	*	*	
V31	1X2	* DO NOT MEASURE.								
V32	1X2	* DO NOT MEASURE.								
V33	5U4G	0V.	330VDC	0V.	365VAC	0V.	365VAC	0V.	330VDC	
V34	5U4G	0V.	330VDC	0V.	365VAC	0V.	365VAC	0V.	330VDC	
V35	19AP4	0V.	.6VDC	PIN 10 300VDC 140VDC	PIN 11 90VDC	PIN 12 6.3VAC				

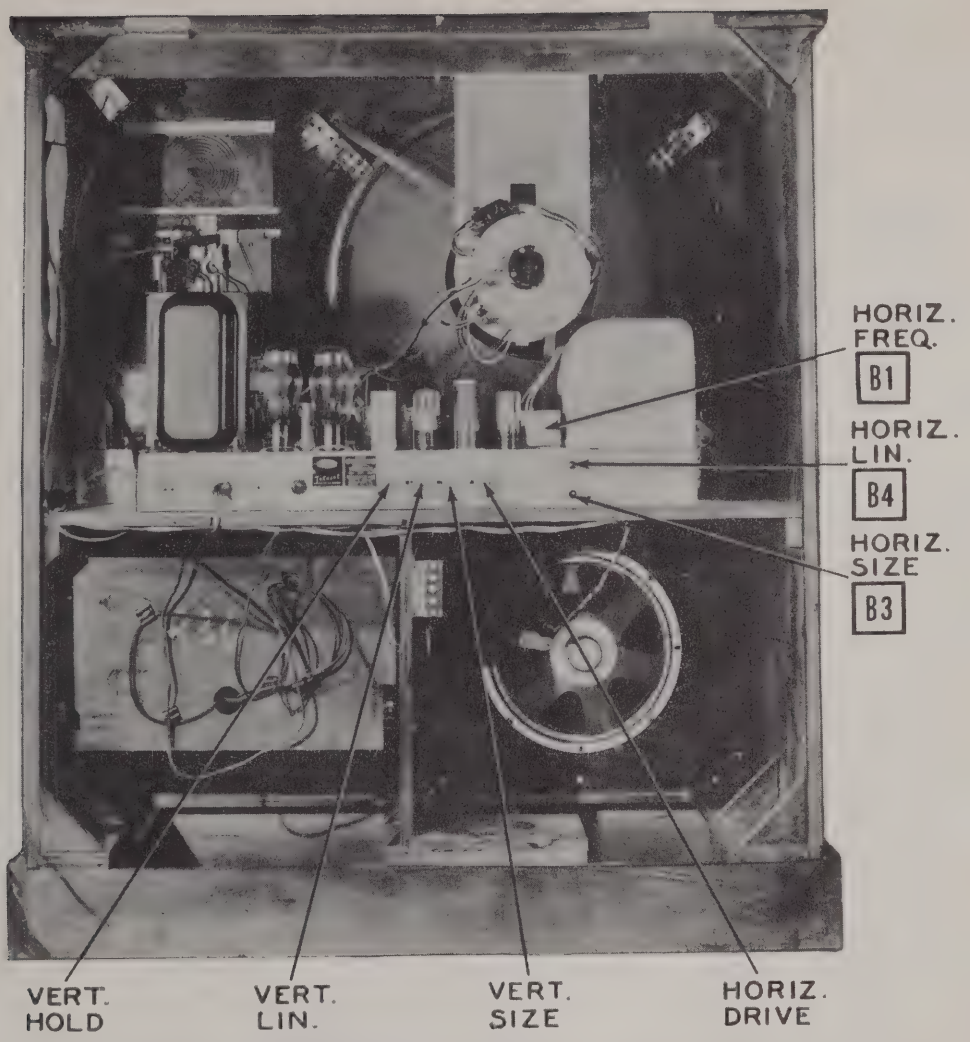
FUNCTION SWITCH IN "TV-LIGHT OFF" POSITION UNLESS OTHERWISE NOTED.
▲ TAKEN IN "FM or TV-LIGHT ON" POSITION.
§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†12KΩ	†12KΩ	0Ω	.1Ω	1.9 Meg.	1.9 Meg.	82Ω		
V 2	6AK5	2.9 Meg.	0Ω	0Ω	.1Ω	†50KΩ	†150KΩ	0Ω		
V 3	6AB4	†12KΩ	Inf.	0Ω	.1Ω	Inf.	12KΩ	0Ω		
V 4	6AU6	1.5 Meg.	0Ω	0Ω	.1Ω	†3.3KΩ	†23KΩ	39Ω		
V 5	6AU6	1.5 Meg.	0Ω	0Ω	.1Ω	†3.3KΩ	†68KΩ	39Ω		
V 6	6AU6	.7Ω	0Ω	0Ω	.1Ω	†4KΩ	†3.2KΩ	120Ω		
V 7	6AU6	6.8KΩ	0Ω	0Ω	.1Ω	†2KΩ	†3.2KΩ	120Ω		
V 8	6AL5	.5Ω	0Ω	0Ω	.1Ω	1 Meg.	0Ω	5KΩ		
V 9	6BA6	.5Ω	0Ω	0Ω	.1Ω	†2KΩ	†3.2KΩ	340Ω		
V 10	6AL5	9000Ω 1000Ω	9000Ω 1000Ω	0Ω	.1Ω	27KΩ 19KΩ	0Ω	900KΩ		
V 11	6SN7GT	220KΩ	#150KΩ	56Ω	1.8 Meg.	1.8 Meg.	0Ω	0Ω	.1Ω	
V 12	6BA6	5KΩ	0Ω	0Ω	.1Ω	†6.7KΩ	†56KΩ	1.5KΩ		
V 13	6AQ5	110KΩ	33Ω	.1Ω	0Ω	†3KΩ	†27KΩ	110KΩ		
V 14	6AU6	1.6 Meg.	0Ω	.1Ω	0Ω	†2KΩ	†6.9KΩ	120Ω		
V 15	6AU6	1.6 Meg.	0Ω	.1Ω	0Ω	†2KΩ	†6.9KΩ	150Ω		
V 16	6AU6	270KΩ	0Ω	.1Ω	0Ω	†2KΩ	†23KΩ	150Ω		
V 17	6AL5	0Ω	100KΩ	.1Ω	0Ω	200KΩ	0Ω	100KΩ		
V 18	6AL7GT	3.3KΩ	.1Ω	▲†46Ω	1.5 Meg.	0Ω	0Ω	0Ω	3.3KΩ	
V 19	12AU7	†150KΩ	600KΩ	1.5KΩ	0Ω	0Ω	†225KΩ	860KΩ	0Ω	.1Ω
V 20	6V6GT	0Ω	0Ω	†1.9KΩ	†1.5KΩ	270KΩ	Inf.	.1Ω	240Ω	
V 21	6AU6	1.2 Meg.	0Ω	0Ω	.1Ω	†27KΩ	†5.5KΩ	0Ω		
V 22	6AL5	1 Meg.	500KΩ	0Ω	.1Ω	33KΩ	0Ω	500KΩ		
V 23	6SN7GT	†1.2 Meg.	†9KΩ	0Ω	220KΩ 1.2 Meg.	#825KΩ #3.8 Meg.	200Ω	.1Ω	0Ω	
V 24	6SN7GT	1 Meg.	#4KΩ	2.1KΩ 610Ω	1 Meg.	#4KΩ	2.1KΩ 610Ω	.1Ω	0Ω	
V 25	6BC5	1.4 Meg.	22Ω	0Ω	.1Ω	†22KΩ	†25KΩ	22Ω		
V 26	6AK6	220KΩ	0Ω	.1Ω	0Ω	†7.5KΩ	†47KΩ	20Ω		
V 27	6BG6G	Inf.	0Ω	135Ω	470KΩ	470KΩ	Inf.	.1Ω	†5KΩ	TOP CAP #95Ω
V 28	6BG6G	Inf.	.1Ω	135Ω	†5KΩ	470KΩ	470KΩ	0Ω	†5KΩ	TOP CAP #95Ω
V 29	6W4GT	Inf.	Inf.	150KΩ	Inf.	†46Ω	Inf.	#6.8Ω	#7Ω	
V 30	6W4GT	Inf.	Inf.	150KΩ	Inf.	†46Ω	Inf.	#7Ω	#6.8Ω	
V31	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #170Ω
V32	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP Inf.
V33	5U4G	Inf.	7KΩ	Inf.	65Ω	Inf.	65Ω	Inf.	7KΩ	
V34	5U4G	Inf.	7KΩ	Inf.	65Ω	Inf.	65Ω	Inf.	7KΩ	
V35	19AP4	0Ω	1.3 Meg.	PIN 10 †70Ω †270Ω	PIN 11 60KΩ	PIN 12 .1Ω				

FUNCTION SWITCH IN "TV-LIGHT OFF" POSITION UNLESS OTHERWISE NOTED.
▲ TAKEN IN "FM or TV-LIGHT ON" POSITION.
† MEASURED FROM PIN 2 OF V34.
# MEASURED FROM PIN #3 OF V30Ω

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ADJUSTMENT

Turn the set on and tune in a TV station preferably a test pattern.

Adjust the horizontal frequency slug (B1) to the mid-position between the two points where the picture falls into synchronization, not out of synchronization. Reduce the horizontal size until both edges of the picture are visible.

Turn up the brightness, and reduce the contrast until the normally blanked borders of the raster is visable. If the blanked borders on both sides of the raster is not equal in width, the horizontal phasing slug (B2) is not properly adjusted. B2 should be adjusted until the normally blanked border is equal in width on both side.

HORIZONTAL LINEARITY ADJUSTMENTS

Turn the horizontal drive control clockwise as far as possible without crowding the right side of the picture.

Adjust the horizontal size slug (B3) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B4) until the picture is symmetrical from left to right. A slight readjustment of the horizontal drive control may be necessary for optimum results.

AGC ADJUSTMENT

Remove the AGC detector tube (V10) from its socket. Connect a VTVM to pin 2 of V10 and adjust the AGC control until the VTVM reads 16 volts with no signal.

FIRESTONE MODEL 4-C-18
(BATTERY-LINE OPERATED)

FIRESTONE MODEL 4-C-18
(BATTERY-LINE OPERATED)

FIRESTONE MODEL 4-C-18

TRADE NAME	Firestone, Model 4-C-18
SUPPLIER	Firestone Tire and Rubber Co., Akron, Ohio
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1L4 or 1U4 RF Amp., 1R5 Converter, 1L4 or 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	105-125 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	.15 Amp. at 117 Volts or 43MA at 9 Volts DC and 17MA at 90 Volts DC
TUNING RANGE—BROADCAST	545-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer to last dot at low frequency end of dial backing plate.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 1R5 (V2). Low side to B-.	455KC (400 ~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.	.1MFD	"	1610KC	"	"	A5	"
3.		Loop	1400KC	Tune for max. output	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

FIRESTONE MODEL 4-C-18

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1A	RF Amp.	1L4	1L4	6AR	
B	RF Amp.	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3A	IF Amp.	1L4	1L4	6AR	
B	IF Amp.	1U4	1U4	6AR	
V4	DET-AVC-AF	1U5	1U5	6BW	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	18-296	AF106D40A		UP4415C11		R1055	▲ Filter
B	30	150							■ Filter
C	200	25							▲ Filament Bypass
C2	.05	200	16-152	P288-05	DF-503	PTE4S5		2TM-S5	RF Grid Filter
C3	.05	400	16-179	P488-05	DF-503	PTE4S5		4TM-S5	Line Isolation
C4	10	500	16-186	1468-00001	D6-100	5W5Q1	GP1K-10	MS-41	Osc. Grid Cap.
C5	.02	400	16-150	P488-02	DF-203	PTE4S2		4TM-S2	Osc. Anode Dec.
C6	.005	600	16-153	P688-005	D6-502	PTE6D5	811-005	6TM-D5	IF Grid Filter
C7	.1	200	16-157	P288-1	DF-104	PTE4P1		2TM-P1	Filament Bypass
C8	.1	200	16-157	P288-1	DF-104	PTE4P1		2TM-P1	Filament Bypass
C9	.05	200	16-152	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C10	.1	200	16-157	P288-1	DF-104	PTE4P1		2TM-P1	Decoupling *
C11A	200		17-103	SI200	D6-201	5W5T2	GP2K-200		Diode RF Filter
B	2000			SI2000	DD-202	PTE6D2	811-002		Audio Coupling
C	5000			BPD-005	DD-502	PTE6D5	811-005	34C4	AF Amp. Screen
D	100			SI100	D6-101	5W5T1	GP1K-100		AF Amp. Plate
E	5000			BPD-005	DD-502	PTE6D5	811-005		Audio Coupling
C12	.005	600	16-153	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate Byp.
C13	.05	400	16-179	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

* Not used in all models.

CONTROLS

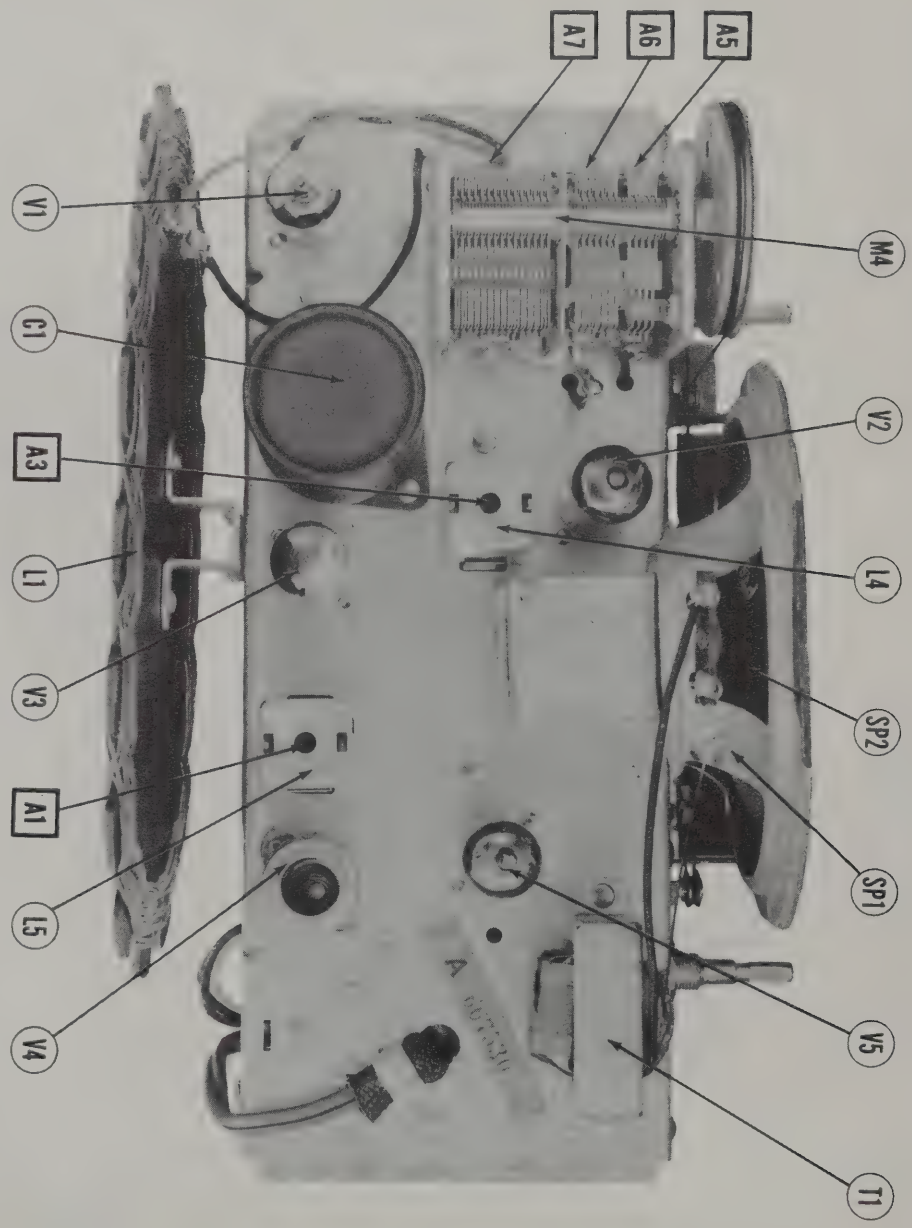
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	24-186	Q13-137	AM-63-Z	BSK-70-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	4.7 Meg.	½	60-669	BTS-4.7 Meg.	RF Amp. Grid
R3	100KΩ	½	60-727	BTS-100K	Osc. Grid
R4	27KΩ	1	60-745	BTA-27K	Osc. Anode
R5	10 Meg.	½	60-728	BTS-10 Meg.	IF Amp. Grid
R6	47KΩ	½	60-730	BTS-47K	Diode Filter
R7	2.2 Meg.	½	60-725	BTS-2.2 Meg.	AVC Network
R8	10 Meg.	½	60-728	BTS-10 Meg.	AF Amp. Grid
R9	4.7 Meg.	½	60-669	BTS-4.7 Meg.	AF Amp. Screen
R10	1 Meg.	½	60-668	BTS-1 Meg.	AF Amp. Plate
R11	820KΩ	½		BTS-820K	Output Grid
R12	1500Ω	½	60-729	BTS-1500	Filter
R13	2000Ω	10	60-757	1 3/4A-2000	Filter
R14	110Ω	3	60-796		Surge Limiter
R15	1500Ω	½	60-729	BTS-1500	Filament String
R16	680Ω	½	60-708	BTS-680	Filament String
R17	470Ω	½	60-770	BTS-470	Filament String
R18	330Ω	½	60-704	BTS-330	Filament String
R19	22KΩ	½	60-744	BTS-22K	Screen Dropping-See Note 1
R20	22KΩ	½	60-744		Parasitic Suppressor

Note 1. Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	9000Ω	4Ω	680Ω	.6Ω	80-228	A-3879	A-2932	RO-16	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-105 ②		
SP1	PM	4Ω	79-384	MOD. P5-X	5A07 ①	① Use universal mounting bracket provided. ② Fabricate new mounting bracket.
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	FIRESTONE PART No.	MEISSNER PART No.	
L1	Loop Ant.	.6Ω		82-66		
L2	RF Coil	12Ω	11Ω	10-535		Secondary taped at 7.2Ω
L3	Osc. Coil	7.2Ω	13Ω	10-553	14-1074	
L4	1st IF	20Ω	20Ω	10-508	16-6668	
L5	2nd IF	20Ω	20Ω	10-508	16-6669	

SELENIUM RECTIFIER

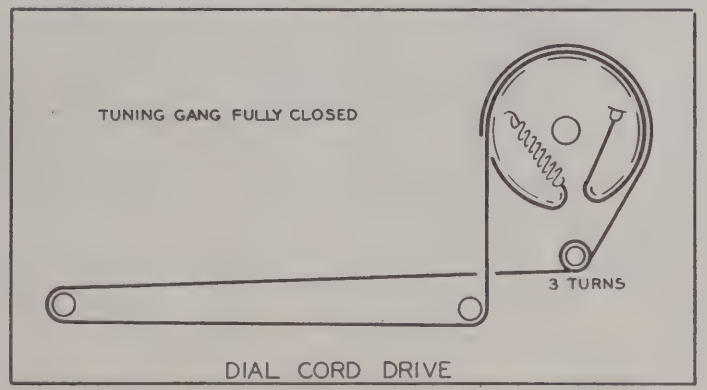
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	FIRESTONE PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.067ADC	83-642	NB-5	5M4	

BATTERIES

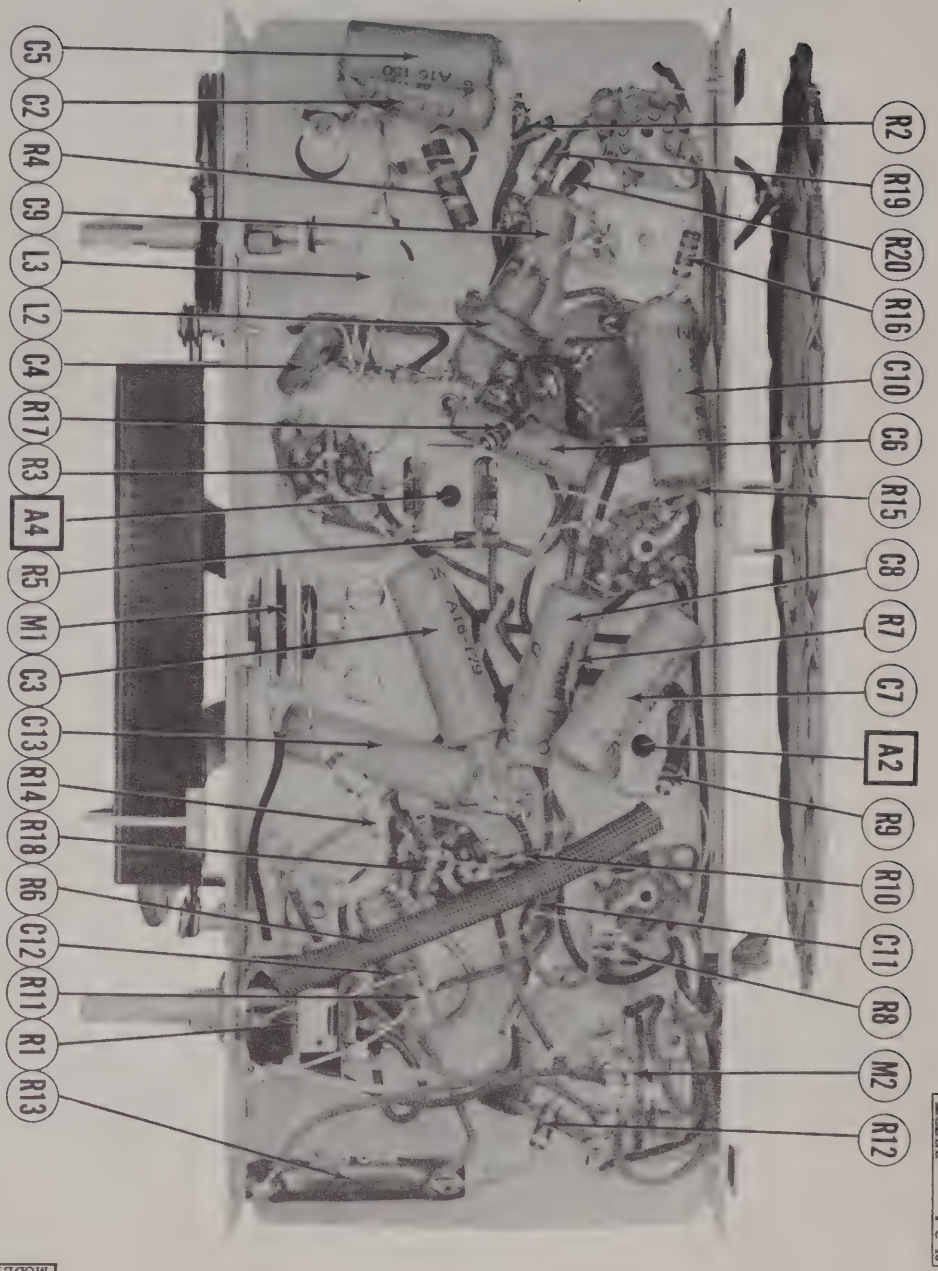
ITEM No.	VOLTAGE	FIRESTONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V "A" 90V "B"	4-D-130			753			F6A60	

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	Switch	69-186	AC/DC-Battery
M4	3 Gang Var. Cap.	19-208	(18-539MMF, 15-272MMF, 10-150MMF)
	Dial Pointer	58-82	
	Dial Scale	67-557	
	Knob	52-310	
	Cabinet	42-469	



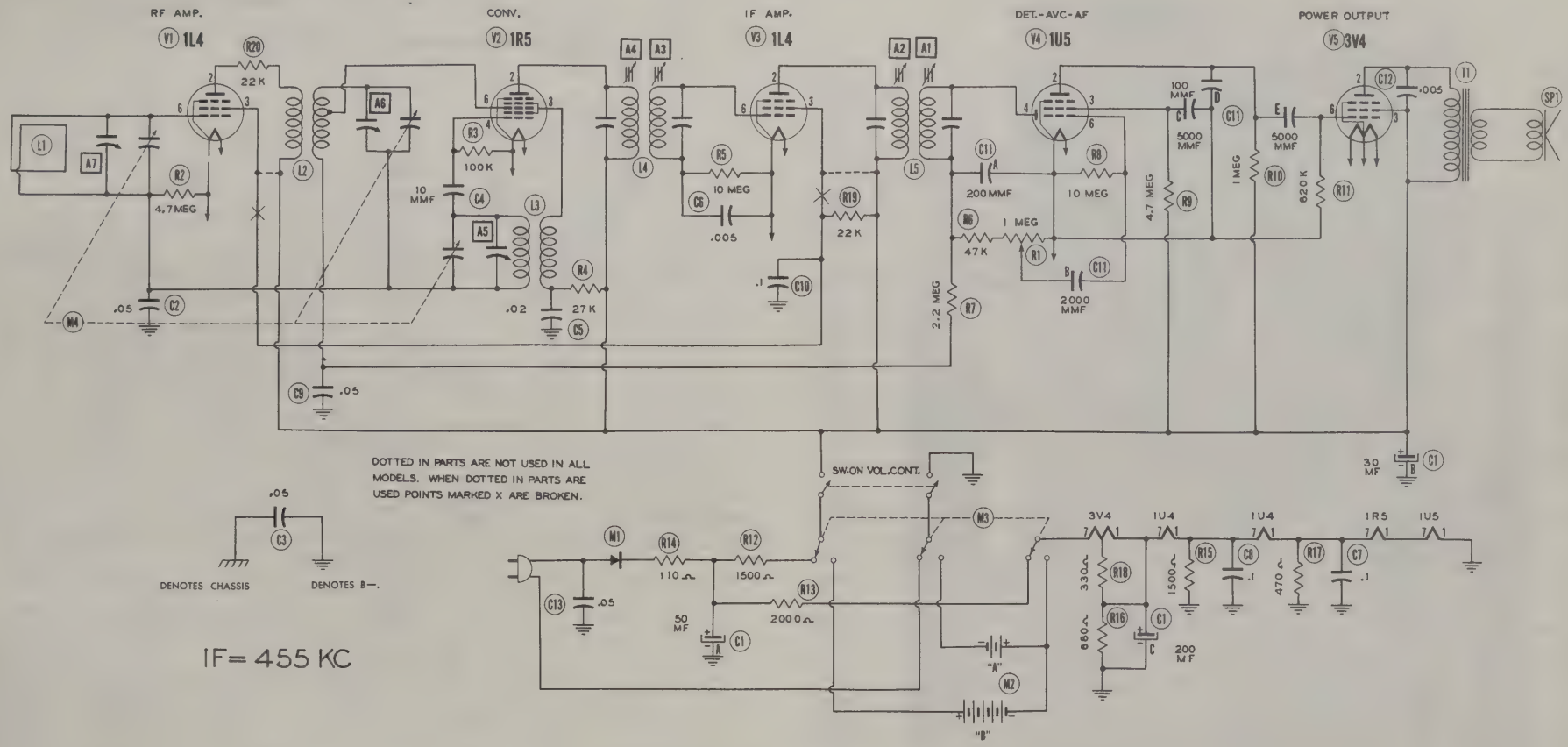
CHASSIS—BOTTOM VIEW



SET 110 FOLDER 8

FIRESTONE MODEL 4-C-18

FIRESTONE MODEL 4-C-18



POWER SWITCH MUST BE ON FOR B+ RESISTANCE MEASUREMENTS
V & R TAKEN IN AC-DC POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1L4	4.2VDC	47VDC	60VDC	0V	4.2VDC	.2VDC	5.8VDC
V 2	1R5	1.4VDC	85VDC	40VDC	§-9VDC	1.4VDC	.1VDC	2.6VDC
V 3	1L4	2.6VDC	85VDC	60VDC	.1VDC	2.6VDC	.1VDC	4.2VDC
V 4	1U5	1.4VDC	7.8VDC	4.7VDC	.2VDC	0V	-.1VDC	0V
V 5	3V4	5.8VDC	80VDC	85VDC	0V	7.2VDC	.3VDC	8.8VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1L4	*	†23KΩ	†23KΩ	Inf.	*	4.7 Meg.	*
V 2	1R5	*	†1.6KΩ	†28KΩ	100KΩ	*	3.2 Meg.	*
V 3	1L4	*	†1.6KΩ	†23KΩ	3.2 Meg.	*	10 Meg.	*
V 4	1U5	*	†1 Meg.	†4.7Meg.	1 Meg.	Inf.	10 Meg.	*
V 5	3V4	*	†2.3KΩ	†1.6KΩ	Inf.	*	820KΩ	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

MECK MODELS MM510T, MM512T, MM516C, T, XOB, XQA, XQR, XRA, XRPT, XSA, XSPT, XTA, XTR, XX900

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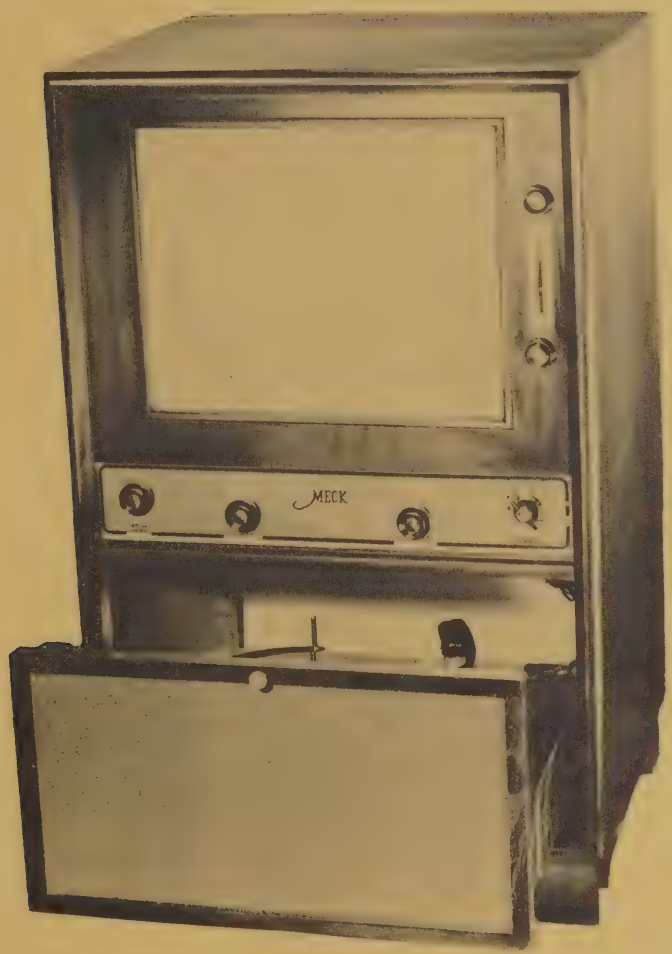

MODEL XSPT

MECK MODELS MM510T, MM512T, MM516C, T, XOB, XQA, XQR, XRA, XRPT, XSA, XSPT, XTA, XTR, XX900

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Date 10/50 Set No. 110—Folder No. 9

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*TRADE-MARK

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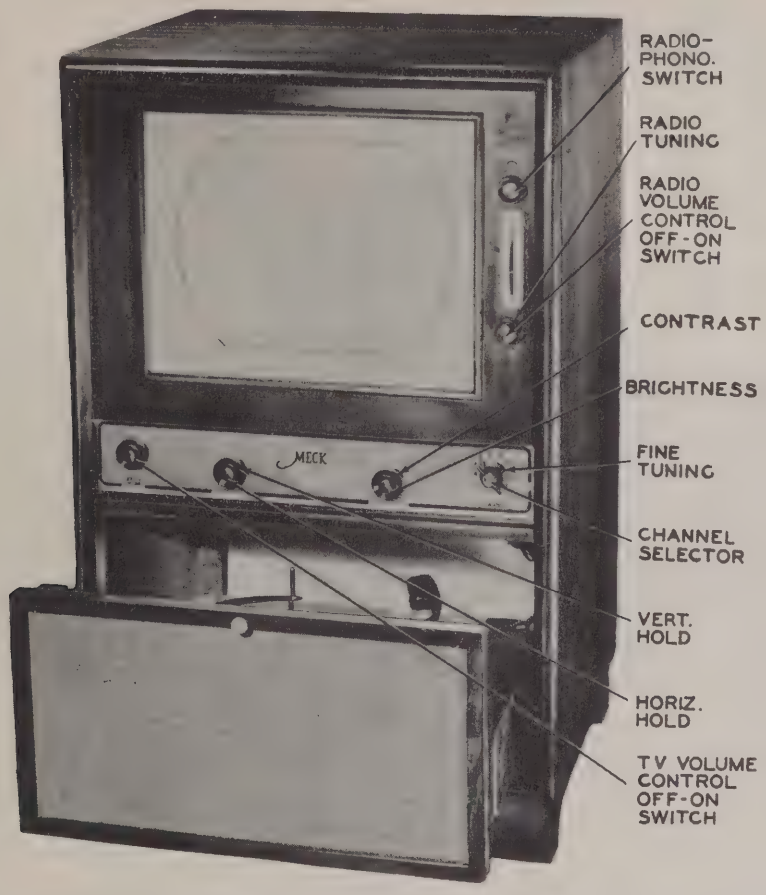

MECK MODEL XSPT

TRADE NAME	Meck, Models MM510T, MM512T, MM516T, C; XOB, XQA, XQR, XRA, XRPT, XSA, XSPT, XTA, XTR, XX900
MANUFACTURER	John Meck Industries Inc., Plymouth, Indiana
TYPE SET	TV-Radio-Phono Combination Receiver (Some models "TV Only")
TUBES	Twenty Four (Combination Receivers) Nineteen ("TV Only" Receivers)
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.8 Amp. at 117 Volts AC (TV), .26 Amp. at 117 Volts AC (Radio)
TUNING RANGE—	TV Channels 2 thru 13, Radio 550-1700KC

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MECK MODELS MM510T, MM512T, MM516C, T, XOB, XQA, XQR, XRA, XRPT, XSA, XSPT, XTA, XTR, XX900

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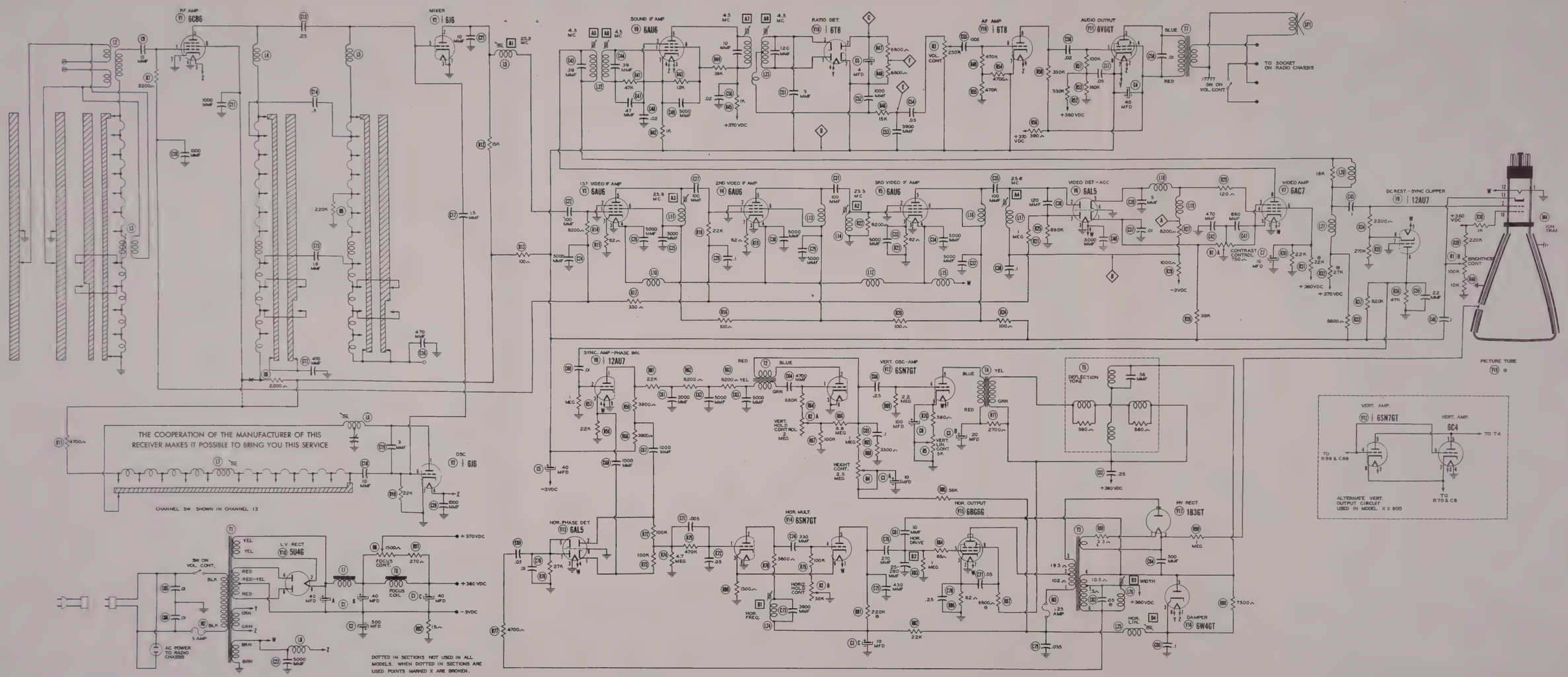
RF AMP V1 6CB6
MIXER V2 6J6
SOUND IF AMP V9 6AU6
RATIO DET. V10 6T8
AF AMP V10 6T8
AUDIO OUTPUT V11 6V6GT
1ST VIDEO IF AMP V3 6AU6
2ND VIDEO IF AMP V4 6AU6
3RD VIDEO IF AMP V5 6AU6
VIDEO DET - AGC V6 6AL5
VIDEO AMP V7 6AC7
DC REST. - SYNC CLIPPER V8 12AU7
SYNC. AMP - PHASE INV. V9 12AU7
VERT. OSC - AMP V12 6SN7GT
HOR. PHASE DET. V13 6AL5
HOR. MULT V14 6SN7GT
HOR. OUTPUT V15 6BG6G
L.V. RECT V16 5U4G
HV RECT. V17 1B3GT
DAMPER V16 6W4GT
OSC V2 6J6
PICTURE TUBE V18
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
CHANNEL SW SHOWN IN CHANNEL 13
SW ON VOL. CONT.
AC POWER TO RADIO CHASSIS
FOCUS CONT.
FOCUS COIL
HOR. FREQ.
HORIZ. HOLD CONT
HOR. DRIVE
HOR. LIN.
WIDTH
VERT. HOLD CONT.
HEIGHT CONT.
VERT. LIN. CONT
CONTRAST CONTROL
BRIGHTNESS CONT
DEFLECTION YOKE
ION TRAP
TO SOCKET ON RADIO CHASSIS
VERT. AMP. V12 6SN7GT
VERT. AMP. 6C4
ALTERNATE VERT. OUTPUT CIRCUIT USED IN MODEL X X 900
+370 VDC
+360 VDC
-3VDC

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DOTTED IN SECTIONS NOT USED IN ALL MODELS. WHEN DOTTED IN SECTIONS ARE USED POINTS MARKED X ARE BROKEN.

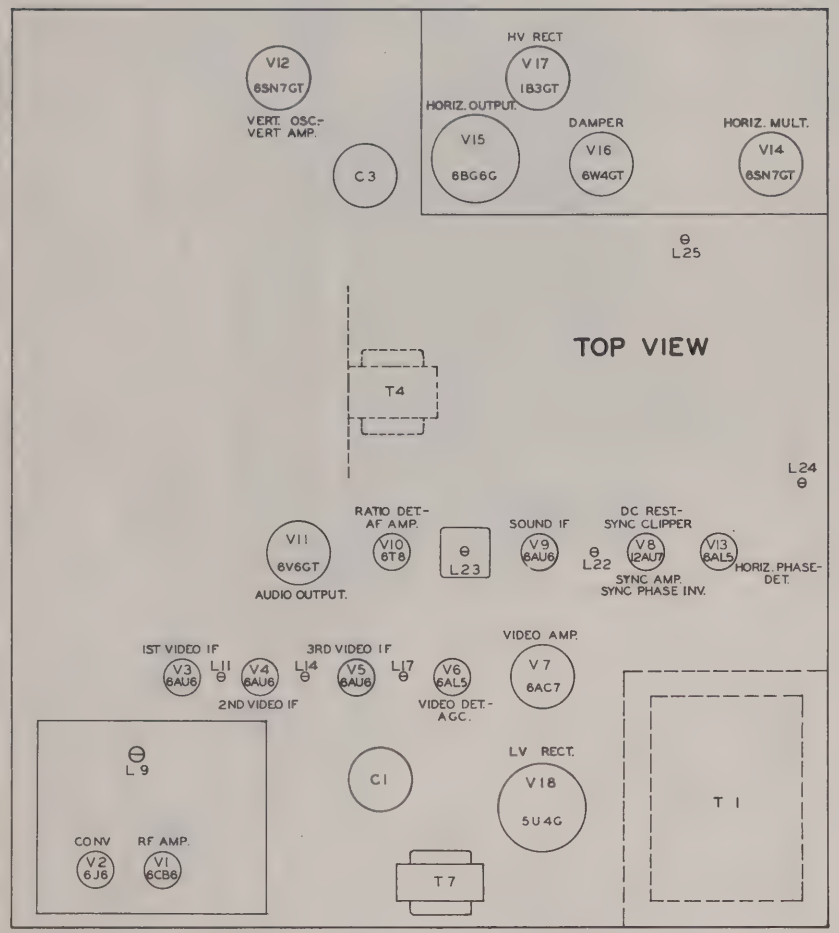
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

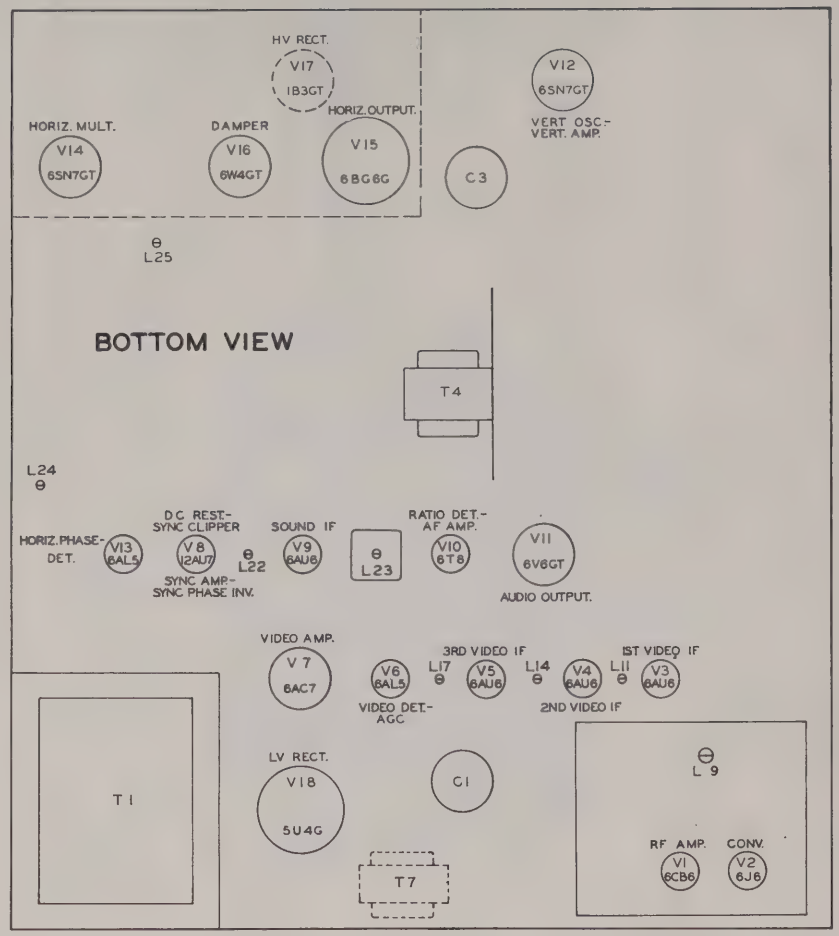
MECK MODELS MM510T, MM512T, MM516C, T, XOB, XQA, XQR, XRA, XRPT, XSA, XSPT, XTA, XTR, XX900

MECK MODELS MM510T, MM512T, MM516C, T, XOB, XQA, XQR, XRA, XRPT, XSA, XSPT, XTA, XTR, XX900

CHASSIS TOP VIEW

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

MECK MODELS MM5107, MM5127, MM5160, T, XOB, XQA, XQR, XRA, XRPT, XSA, XSPT, XTA, XTR, XX900

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If receiver is to be aligned with the picture tube removed the high voltage lead should be securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indication.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	23.3MC (Unmod.)	Any	DC Probe to Point (A). Common to Point (B).	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum 1 volt reading.
2.	Direct	"	25.6MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	21.6MC 23MC 23.5MC 25.6MC 26.1MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. The 23MC and 26.1MC should be at 50% response. If necessary, slightly retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

It should be noted that the common lead of the VTVM is at a potential of approximately 140 volts with respect to chassis; avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (C). Common to Point (D).	A5, A6, A7	Adjust for maximum output.
5.	.01MFD	"	"	"	DC Probe to Point (E). Common to Point (F).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V7). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A5, A6, A7	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per figure 2.
5.	.01MFD	"	"	"	"	Vert. Amp. to Point (E). Low side to chassis.	A8	Reconnect capacitor C6. Adjust A8 to place 4.5MC at center of crossover lines as per figure 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

THE RF TUNER PORTION OF THIS RECEIVER HAS BEEN PRE-ALIGNED AT THE FACTORY AND IS VERY STABLE, AND WILL NOT NORMALLY REQUIRE ADJUSTMENT IN THE FIELD.

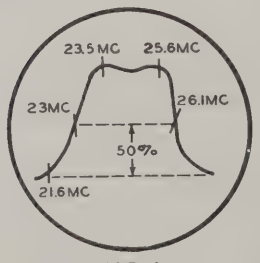


FIG. 1

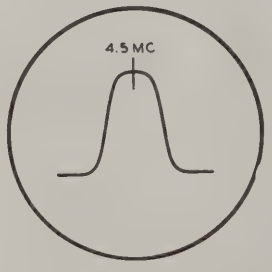


FIG. 2

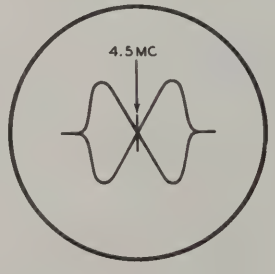


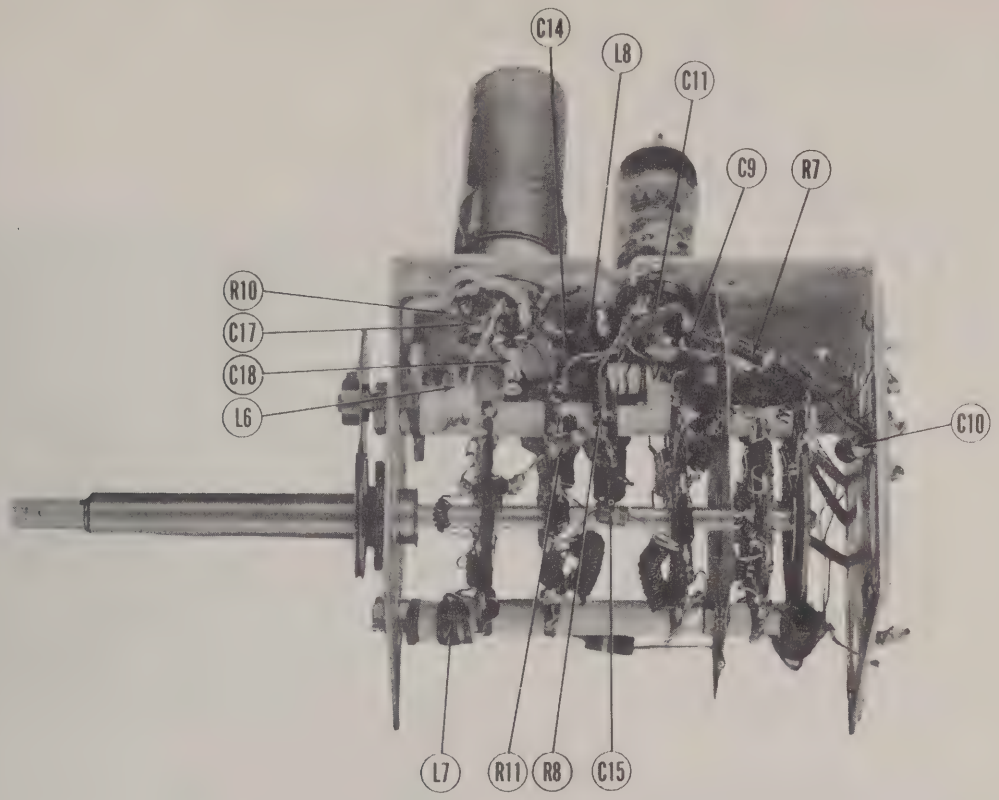
FIG. 3

RADIO ALIGNMENT INSTRUCTIONS

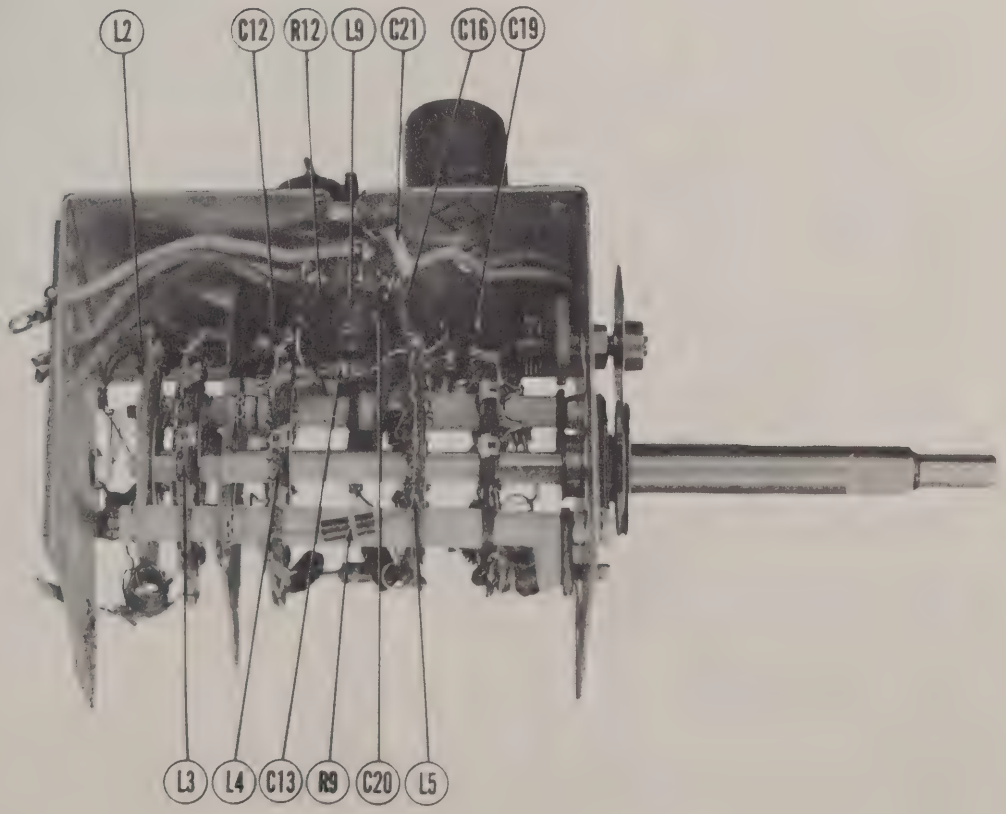
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer 1 11/16" from center of Phono-Radio switch shaft.
Turn the Phono-Radio switch to the radio position (fully clockwise).
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
6.	.01MFD	High side to pin 7 (Grid) of 12BE6 (V20). Low side to chassis.	455KC (400 ∿ Mod.)		Tuning gang fully open	Across voice coil	A9, A10, A11, A12	Adjust for maximum output.
7.	.01MFD	"	1700KC		"	"	A13	"
8.		Loop	1400KC		Tune for max. output	"	A14	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.4VDC	0V.	6.3VAC	0V.	90VDC	90VDC	0V.		
V 2	6J6	80VDC	70VDC	0V.	6.3VAC	-.6VDC	§-2.8VDC	0V.		
V 3	6AU6	-.4VDC	0V.	0V.	6.3VAC	125VDC	125VDC	.6VDC		
V 4	6AU6	-.4VDC	0V.	0V.	6.3VAC	125VDC	125VDC	.6VDC		
V 5	6AU6	0V.	0V.	0V.	6.3VAC	130VDC	130VDC	1.2VDC		
V 6	6AL5	.1VDC	-3VDC	0V.	6.3VAC	-2.8VDC	0V.	-.4VDC		
V 7	6AC7	0V.	6.3VAC	1.3VDC	-2.8VDC	1.3VDC	180VDC	0V.	170VDC	
V 8	12AU7	130VDC	0V.	8VDC	6.3VAC	6.3VAC	5.8VDC	0V.	1.2VDC	0V.
V 9	6AU6	#5.3VDC	#8VDC	#0V.	#6.3VAC	#230VDC	#60VDC	#8VDC		
V 10	6T8	#-.2VDC	#-.4VDC	#-.2VDC	#0V.	#6.3VAC	#0V.	#0V.	#-.6VDC	#105VDC
V 11	6V6GT	0V.	#6.3VAC	#200VDC	#220VDC	-8.5VDC	0V.	#0V.	#0V.	
V 12	6SN7GT	-4.4VDC	215VDC 100VDC	0V.	0V.	330VDC	7.6VDC 18VDC	6.3VAC	0V.	
V 13	6AL5	1.4VDC	-1.4VDC	0V.	6.3VAC	0V.	0V.	0V.		
V 14	6SN7GT	.2VDC	250VDC	11VDC	-5.2VDC	110VDC	11VDC	6.3VAC	0V.	
V 15	6BG6G	-2.2VDC	0V.	10VDC	0V.	-2.2VDC	0V.	6.3VAC	290VDC	TOP CAP *
V 16	6W4GT	0V.	0V.	440VDC	0V.	360VDC	0V.	#6.3VAC	#0V.	
V 17	1B3GT	* DO NOT MEASURE.								
V 18	5U4G	0V.	390VDC	0V.	360VAC	0V.	360VAC	0V.	390VDC	
V 19	16JP4	0V.	1.1VDC	PIN 10 360VDC	PIN 11 130VDC	PIN 12 6.3VAC				

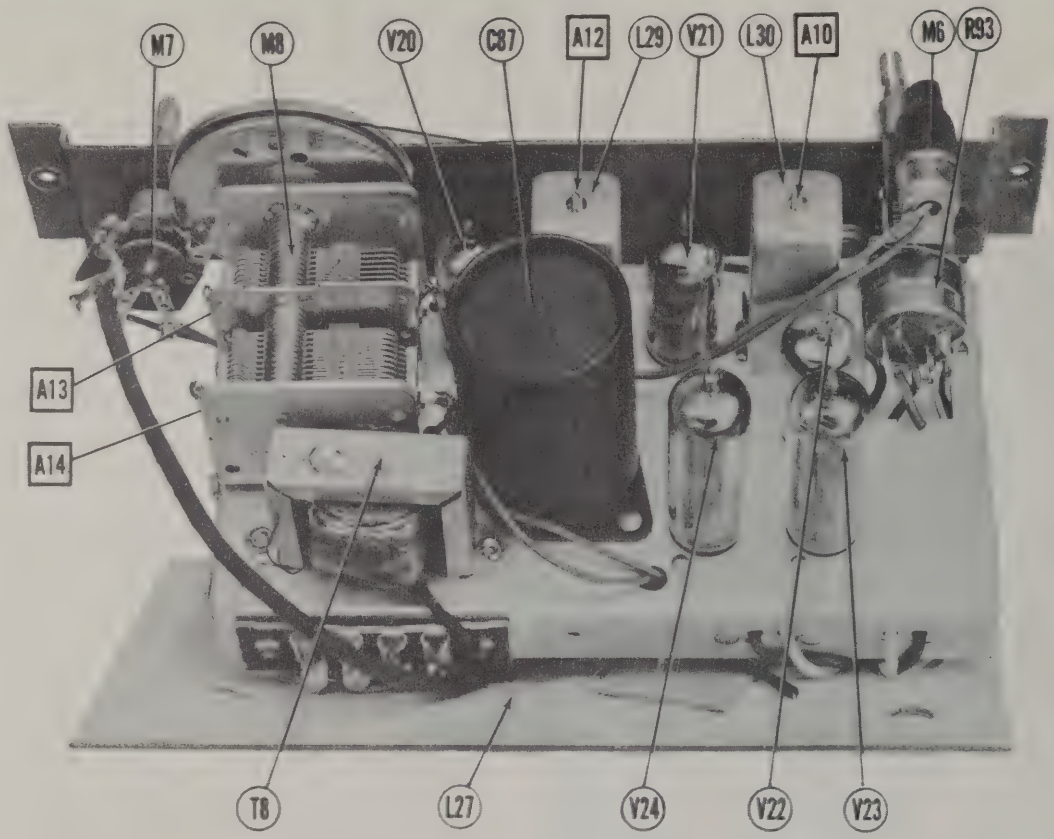
FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
# MEASURED FROM PIN 8 OF V11.
* DO NOT MEASURE.

RESISTANCE READINGS

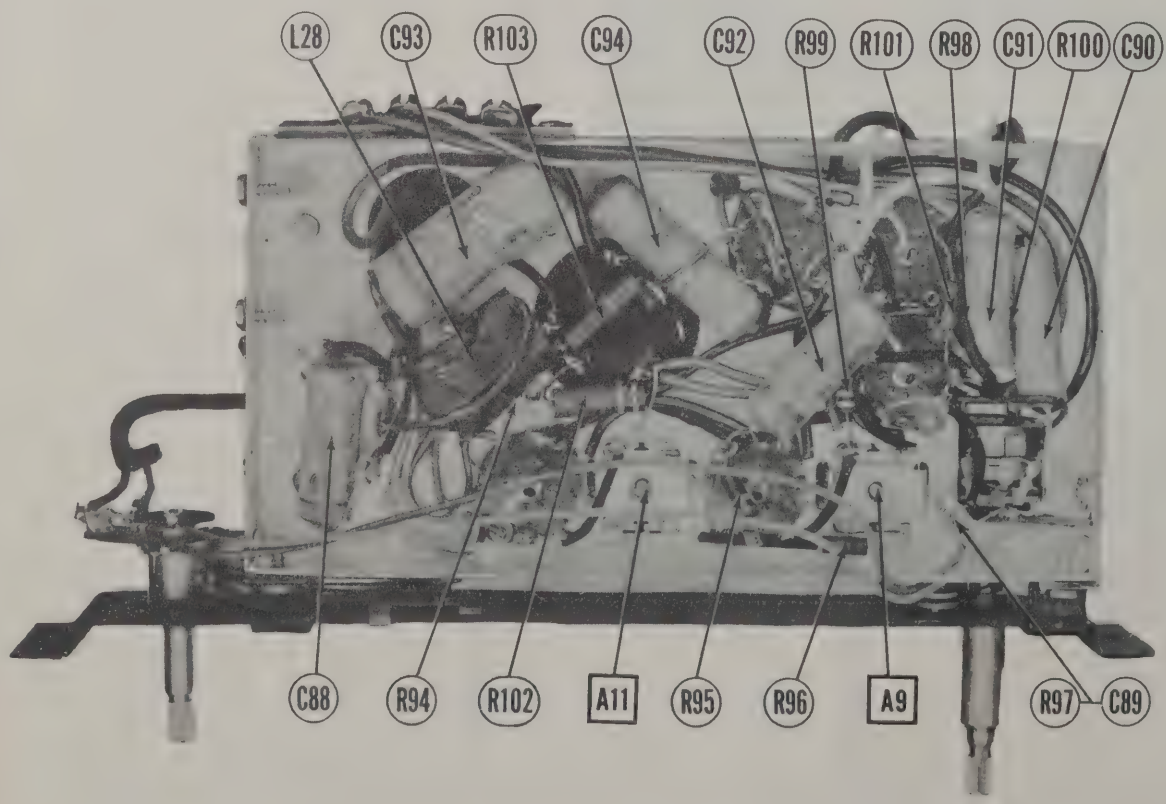
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1.7 Meg.	0Ω	.1Ω	0Ω	#2.3KΩ	#2.3KΩ	0Ω		
V 2	6J6	#4.8KΩ	#15KΩ	0Ω	.1Ω	220KΩ	22KΩ	0Ω		
V 3	6AU6	1.7 Meg.	0Ω	0Ω	.1Ω	#300Ω	#300Ω	82Ω		
V 4	6AU6	1.7 Meg.	0Ω	0Ω	.1Ω	#200Ω	#200Ω	82Ω		
V 5	6AU6	.1Ω	0Ω	0Ω	.1Ω	#100Ω	#100Ω	82Ω		
V 6	6AL5	1Ω	1000Ω	0Ω	.1Ω	9.2KΩ	0Ω	680KΩ		
V 7	6AC7	Inf.	.1Ω	750Ω	9.3KΩ	750Ω	†16KΩ	†14KΩ		
V 8	12AU7	#8KΩ	1 Meg.	22KΩ	.1Ω	.1Ω	47KΩ	0Ω	270KΩ	0Ω
V 9	6AU6	#48KΩ	#1000Ω	#0Ω	#.1Ω	†1.9KΩ	†18KΩ	#1000Ω		
V 10	6T8	Inf.	#14KΩ	Inf.	#0Ω	#.1Ω	#0Ω	#0Ω	#475KΩ	†330KΩ
V 11	6V6GT	Inf.	#.1Ω	†930Ω	†500Ω	280KΩ	Inf.	#0Ω	#0Ω	
V 12	6SN7GT	2.8 Meg.	†1 Meg. †3.5 Meg.	0Ω	2.2 Meg.	†3.7KΩ	5.6KΩ 560Ω	.1Ω	0Ω	
V 13	6AL5	4.8 Meg.	4.8 Meg.	0Ω	.1Ω	27KΩ	0Ω	27KΩ		
V 14	6SN7GT	5 Meg.	†35KΩ	1.5KΩ	150KΩ	†250KΩ	1.5KΩ	.1Ω	0Ω	
V 15	6BG6G	1 Meg.	0Ω	82Ω	Inf.	1 Meg.	Inf.	.1Ω	†7KΩ	TOP CAP †8KΩ
V 16	6W4GT	Inf.	Inf.	†7.7KΩ	Inf.	†170Ω	Inf.	#.1Ω	#0Ω	
V 17	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †8.2KΩ
V 18	5U4G	Inf.	20KΩ	Inf.	45Ω	Inf.	45Ω	Inf.	20KΩ	
V 19	16JP4	0Ω	270KΩ	PIN 10 †1.2KΩ	PIN 11 90KΩ	PIN 12 .1Ω				

FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
† MEASURED FROM PIN 2 OF V18.
# MEASURED FROM PIN 8 OF V11.

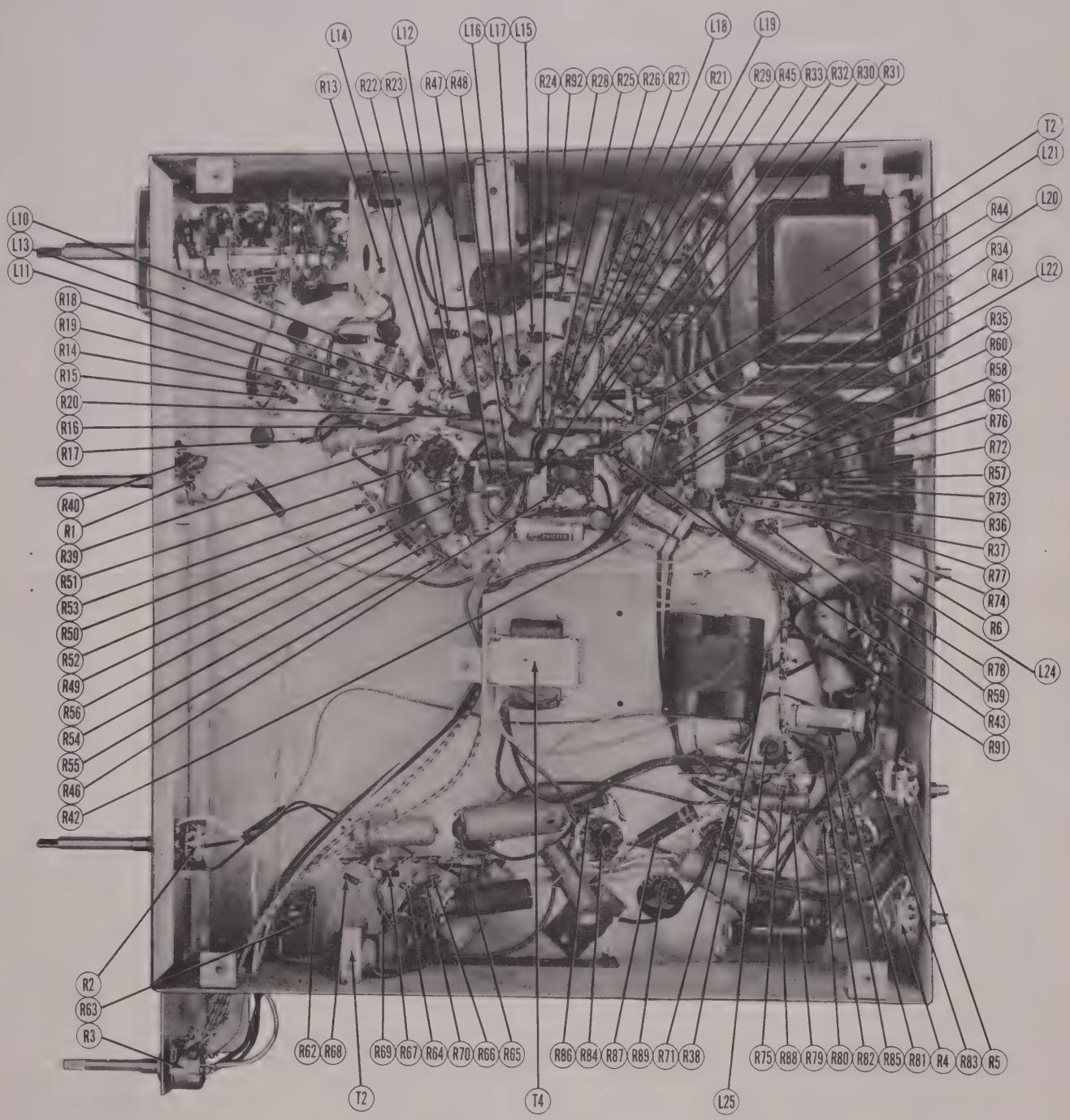
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



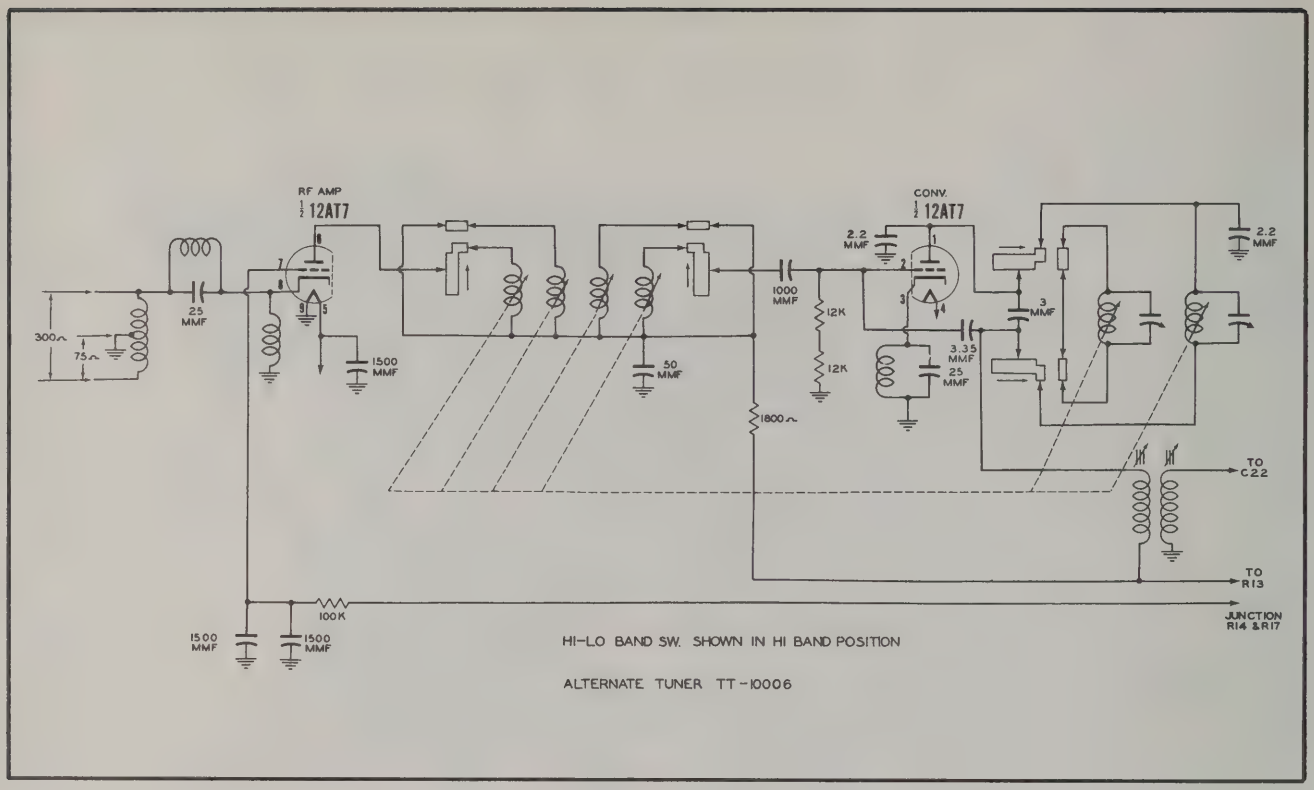
RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW



CHASSIS BOTTOM VIEW- RESISTOR AND INDUCTOR IDENTIFICATION



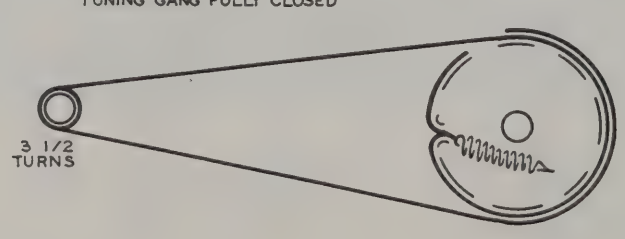
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove ten push-on type control knobs.
2. Remove ten 1/4" hex head wood screws holding rear cover. Remove rear cover.
3. Disconnect phonograph leads.
4. Disconnect built-in antenna.
5. Disconnect speaker, loop, and power leads from radio.
6. Remove two 5/16" hex nuts holding radio chassis. Remove radio chassis.
7. Remove five 3/8" hex head bolts holding TV chassis. Remove TV chassis.
8. Remove two 9/32" hex nuts from speaker. Remove speaker.

PICTURE TUBE REMOVAL

1. Remove chassis as outlined above.
2. Remove rubber covered guard at front of tube.
3. Remove guard at front of chassis. Remove tube.



DIAL CORD STRINGING

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		MECK PART No.	STANDARD REPLACEMENT		
V1A	RF Amp.	6CB6	6CB6	6CK	
B	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AU6	6AU6	7BK	
V4	2nd Video IF	6AU6	6AU6	7BK	
V5	3rd Video IF	6AU6	6AU6	7BK	
V6	Video Det.-AGC	6AL5	6AL5	6BT	
V7	Video Amp.	6AC7	6AC7	8N	
V8	DC Rest. Sync. Clipper-Sync. Amp. -Sync. Phase Inv.	12AU7	12AU7	9A	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.-AF Amp.	6T8	6T8	9E	
V11	Audio Output	6V6GT	6V6GT	7AC	
V12	Vert. Osc.-Amp.	6SN7GT	6SN7GT	8BD	
V13	Hor. Phase Det.	6AL5	6AL5	6BT	
V14	Hor. Mult.	6SN7GT	6SN7GT	8BD	
V15	Hor. Output	6BG6G	6BG6G	5BT	
V16	Damper	6W4GT	6W4GT	4CG	
V17	HV Rect.	1B3GT	1B3GT	3C	
V18	LV Rect.	5U4G	5U4G	5T	
V19A	Picture Tube	10BP4	10BP4	12D	
B	Picture Tube	12LP4	12LP4	12D	
C	Picture Tube	16JP4	16JP4	12D	16LP4 alternate
D	Picture Tube	19DP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MECK PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	450		AF888J		UPT44445		TVL-3787	▲ Filter
B	40	450							■ Filter
C	40	450							▲ Filter
C2	500	5		PRS6/500		BRH605A		TVA-1103	Filter
C3A	10	450		AF2222J		UPT11145		TVL-4760	▲ Vert. Osc. Dec.
B	20	450							■ Vert. Output Dec.
C	10	450							▲ Decoupling
C4	40	350		PRS450/40		BR4045A		TVA-1611	Output Dec.
C5	40	350		PRS450/40		BR4045A		TVA-1611	Decoupling
C6	4	50		PRS150/4		BBR4-50		TVA-1303	Stabilizing Cap.
C7	10	250		PRS250/12		BR1025		TVA-1504	V. Amp. Screen
C8	100	25		PRS25/100		BRH251A		TVA-1207	Vert. Output Cath.
C9	15			SI15	D6-150		GP1K-15	19C22	RF Coupling
C10	1000			BPD-001	DD-102		811-001	19C1	AGC Filter
C11	1000			BPD-001	DD-102		811-001	19C1	RF Decoupling
C12	470			SI470	D6-471		GP2K-470	19C15	RF Decoupling
C13	.25								RF Coupling
C14	.5				TCZ-5				RF Coupling
C15	1.8								RF Coupling
C16	470			SI470	D6-471		GP2K-470	19C15	Mixer Grid Filter
C17	1.5			SI1.5NPO	TCZ-1.5		NPOK-1.5		Osc. Coupling
C18	10			SI10NPO	TCZ-10		NPOK-10	19C3	Osc. Grid Cap.
C19	3			SI3NPO	TCZ-3.3		N080-331-3		Osc. Feedback
C20	1000			BPD-001	DD-102		811-001	19C1	Conv. Fil. Bypass
C21	10			SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C22	100	500		1468-0001	D6-101		GP1K-100	1FM-31	IF Coupling
C23	5000			BPD-005	DD-502		811-005	29C1	Fil. Bypass
C24	5000			BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C25	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Dec.
C26	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Fil.
C27	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	IF Coupling
C28	.1	600		P688-1	DF-104	PTE6P1		TM-1	AGC Filter
C29	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Dec.
C30	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Fil.
C31	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	IF Coupling
C32	5000			BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Dec.
C33	5000			BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Cath.
C34	5000			BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Fil.
C35	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	IF Coupling
C36	120			SI120	D6-121	5W5T15	GP2K-120	19C29	IF Coupling
C37	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-11	DAGC Decoupling
C38	.1	600		P688-1	DF-104	PTE6P1		TM-1	Bias Filter
C39	5			SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	V. Diode Filter
C40	5000			BPD-005	DD-502	1D5D5	811-005	29C1	V. Det. AGC Filter
C41	680			SI680	D6-681	1W5T7	GP2K-680	19C17	V. Amp. Cath.
C42	470			SI470	D6-471	5W5T5	GP2K-470	19C15	V. Amp. Cath.
C43	39	500		1469-00004	TCZ-39	5R5T4	NPOL-39	MS-44	Fixed Trimmer
C44	39	500		1469-00004	TCZ-39	5R5T4	NPOL-39	MS-44	Fixed Trimmer
C45	.1	600		P688-1	DF-104	PTE6P1		TM-1	Video Coupling
C46	.1	600		P688-1	DF-104	PTE6P1		TM-1	Pic. Tube Cath.
C47	47	500		1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	S. IF Grid Filter
C48	.02	600		P688-02	DF-203	PTE6S2		TM-12	S. IF Cath.
C49	5000			BPD-005	DD-502	1D5D5	811-005	29C1	S. IF Screen
C50	.02	600		P688-02	DF-203	PTE6S2			S. IF Dec.
C51	3			SI3NPO	TCZ-3.3		NPOK-3		Balancing
C52	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	Diode Load Cap.
C53	3900			SI4000	D6-402	PTE6D4	GP2M-004	1FM-24	De-emphasis
C54	.05	600		P688-05	DF-503	PTE6S5		TM-15	Audio Coupling
C55	.005	600		P688-005	D6-502	PTE6D5	811-005	TM-25	Audio Coupling
C56	.02	600		P688-02	DF-203	PTE6S2		TM-12	Audio Coupling
C57	.05	600		P688-05	DF-503	PTE6S5		TM-15	Bias Filter
C58	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-11	Output Plate Byp.
C59	22	500		1468-000025	D6-220	5W5Q25	GP1K-22	MS-425	Sync. Clipper Plate Byp
C60	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-11	Sync. Coupling

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP.	RATING VOLT	REPLACEMENT DATA MECK PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C61	2000			SI2000	D6-202	1WSD2	GP2M-002	29C2	Integrator Net.
C62	5000			SI5000	D6-502	1DSD5	811-005	29C1	Integrator Net.
C63	5600			SI5000	D6-502	1DSD6	811-005	29C1	Integrator Net.
C64	4700			SI4700	D6-472	1DSD5	GP2M-0047	29C20	Vert. Osc. Grid
C65	.1	600		P688-1		PTE5P1		TM-1	Vert. Discharge
C66	.25	600		684-25		GT6P25		TM-3	Vert. Sweep Coup.
C67	1000			SI1000	D6-102	1WSD1	GP2L-001	19C1	Hor. Sync. Coup.
C68	1000			SI1000	D6-102	1WSD1	GP2L-001	19C1	Hor. Sync. Coup.
C69	.05	600		P688-05	DF-503	PTE5S5		TM-15	Hor. Feedback
C70	.01	600		P688-01	D6-103	PTE5S1	811-01	TM-11	Voltage Divider
C71	.005	600		P688-005	D6-502	PTE5D5	811-005	TM-35	AFC Filter
C72	.05	600		P688-05	D6-503	PTE5S5		TM-15	AFC Filter
C73	3900	500		1464-004		1DR5D4		MS-34	Fixed Trimmer
C74	330	500		1468-00335	D6-331	5WST3	GP2K-330	1FM-335	Hor. Mult. Feedback
C75	430	500							Hor. Discharge
C76	270	500		1468-00025	D6-271	5WST25	GP2K-270	1FM-325	Hor. Sweep Coup.
C77	.05	600		P688-05	DF-503	PTE5S5		TM-15	Hor. Output Screen
C78	.25	600		684-25		GT6P25		TM-3	Hor. Output Cath.
C79	.035	600		P688-033					Damper Filter
C80	.1	600		P688-1		PTE5P1		TM-1	Damper Filter
C81	10	1500		1469-HV-[illegible]					
C82	.25	600		684-25		GT6P25		TM-3	Hor. Sweep Coup.
C83	.05	600		P688-05		PTE5S5		TM-15	Fixed Trimmer *
C84	500	20K		HV30B	TV2-502				HV Filter
C85	.01	600		P688-01	D6-103	PTE5S1	811-01	TM-11	Line Filter
C86	.01	600		P688-01	D6-103	PTE5S1	811-01	TM-11	Line Filter

* Not used in all models.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MECK PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	750Ω	½	VC-12118D		RTV-148	SBBT-560	Contrast control-tapped at 500Ω-front
B	100KΩ	½					Brightness control-rear
R2A	2 Meg.	½	Concentrikit Bil-139 *				Vert. hold control-front
B	50KΩ	½	VC-12117E Bil-123 *		RTV-149	SBB-559	Horiz. hold control-rear
C	Shaft End		E-202 *				Attach per instr. in "Concentrikit".
R3A	250KΩ	½	VC-12129				Volume control
B	Shaft		Not Req.				Attach to R3A per instructions
C	Switch		Not Req.				Attach to R3A per instructions
R4A	2 5 Meg.	½	VC-12121	QII-239	AM-84-S	AN-83	Height control
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	5000Ω	½	VC-12120	QII-114	AM-19-S	AK-1	Vert. linearity control
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Attach to R5A per instructions
R6	1500Ω	4	VC-12122		RTV-6	SVP-994	Focus control-Wire Wound

* Additional parts to be used with Concentrikit.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MECK PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 20% UNLESS 'OTHERWISE STATED
R7	2200Ω 10%	½		BTS-2200	RF Amp. Grid
R8	2200Ω 10%	½		BTS-2200	RF Amp. Decoupling
R9	220KΩ	½			Conv. Grid Coil Shunt
R10	22KΩ	½			Osc. Grid
R11	4700Ω 10%	½		BTS-4700	Osc. Plate
R12	15KΩ	½			Conv. Plate
R13	100Ω	½		BTS-100	Decoupling
R14	8200Ω	½			1st Video IF Amp. Grid
R15	82Ω	½		BTS-82	1st Video IF Amp. Cathode
R16	100Ω	½		BTS-100	1st Video IF Amp. Decoupling
R17	330Ω	½		BTS-330	AGC Network
R18	22KΩ	½			2nd Video IF Amp. Grid
R19	82Ω	½		BTS-82	2nd Video IF Amp. Cathode
R20	100Ω	½		BTS-100	2nd Video IF Amp. Decoupling
R21	1 Meg. 10%	½			AGC Network
R22	82000Ω	½			3rd Video IF Amp. Grid Coil Shunt
R23	82Ω	½		BTS-82	3rd Video IF Amp. Cathode
R24	100Ω	½		BTS-100	3rd Video IF Amp. Decoupling
R25	680KΩ	½		BTS-680K	AGC Diode Load
R26	39KΩ	1		BTA-39K	Voltage Divider
R27	8200Ω	½		BTS-8200	Video Det. Diode Load
R28	1000Ω	½		BTS-1000	Bias Network
R29	130Ω	½			Parasitic Suppressor
R30	22KΩ	1		BTA-22K	Voltage Divider
R31	22KΩ	3			Video Amp. Screen-See Note 1
R32	27KΩ	4			Video Amp. Plate-See Note 2
R33	5600Ω	1		BTA-5600	Voltage Divider
R34	2200Ω	½		BTS-2200	Picture Tube Grid
R35	270KΩ	½		BTS-270K	DC Rest. Load
R36	47KΩ	½		BTS-47K	DC Rest. Load
R37	820KΩ	½		BTS-820K	Voltage Divider
R38	1000Ω	½		BTS-1000	Acc. Anode Decoupling
R39	220KΩ 10%	½		BTS-220K	Voltage Divider
R40	10KΩ	½		BTS-10K	Voltage Divider
R41	47KΩ	½			Sound IF Amp. Grid
R42	1000Ω	½		BTS-1000	Sound IF Amp. Cathode
R43	12KΩ	1			Voltage Divider
R44	39KΩ	1			Sound IF Amp. Screen
R45	1000Ω	½		BTS-1000	Sound IF Amp. Decoupling

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MECK PART No.	IRC PART No.	IDENTIFICATION CODES
R46	15KΩ	½		BTS-15K	De-emphasis
R47	6800Ω	½		BTS-6800	Ratio Det. Diode Load
R48	6800Ω	½		BTS-6800	Ratio Det. Diode Load
R49	470KΩ	½		BTS-470K	AF Amp. Grid
R50	330KΩ	½		BTS-330K	AF Amp. Plate
R51	100KΩ	½		BTS-100K	Audio Output Grid
R52	330KΩ 5%	½		BTS-330K-5%	Voltage Divider
R53	180KΩ 5%	½		BTS-180K-5%	Voltage Divider
R54	4700Ω	½		BTS-4700	Voltage Divider
R55	470KΩ	½		BTS-470K	Voltage Divider
R56	390Ω	1		BTA-390	Filter
R57	1 Meg. 10%	½		BTS-1 Meg.	Sync. Amp. Grid
R58	22KΩ	½		BTS-22K	Sync. Amp. Cathode
R59	[illegible]	½		BTS-3900	Sync. Amp. Plate
R60	3900Ω	½		BTS-3900	Sync. Amp. Plate
R61	22KΩ	½		BTS-22K	Integrator
R62	[illegible]	½		BTS-8200	Integrator
R63	[illegible]	½		BTS-8200	Integrator
R64	680KΩ	½		BTS-680K	Vert. Osc. Grid
R65	1 Meg. 10%	½		BTS-1 Meg.	Vert. Osc. Plate
R66	6.8 Meg.	½		BTS-6.8 Meg.	Voltage Divider
R67	100KΩ	½		BTS-100K	Voltage Divider
R68	[illegible]	½		BTS-3300	Vert. Peaking
R69	2.2 Meg.	½		BTS-2.2 Meg.	Vert. Amp. Grid
R70	560Ω	½		BTS-560	Vert. Amp. Cathode
R71	2700Ω	½		BTS-2700	Vert. Amp. Plate Decoupling
R72	100KΩ 5%	½		BTS-100K-5%	Horiz. Phase Det. Load
R73	100KΩ	½		BTS-100K	Horiz. Phase Det. Load
R47	4.7 Meg.	½		BTS-4.7 Meg.	Horiz. Phase Det. Load
R75	470KΩ	½		BTS-470K	Horiz. AFC Filter Network
R76	27KΩ	½		BTS-27K	Feedback Network
R77	4700Ω	½		BTS-4700	Feedback Network
R78	5600Ω	½		BTS-5600	Horiz. Mult. Plate
R79	100KΩ	½		BTS-100K	Horiz. Mult. Grid
R80	1500Ω	½		BTS-1500	Horiz. Mult. Cathode
R81	220KΩ	½		BTS-220K	Horiz. Mult. Plate Decoupling-See Note 3
R82	22KΩ	1		BTA-22K	Filter
R83	1 Meg. 10%	½		BTS-1 Meg.	Horiz. Output Grid
R84	68Ω	½			Parasitic Suppressor
R85	56KΩ	½		BTS-56K	Filter
R86	82Ω	1		BW-1-82	Horiz. Output Cathode
R87	[illegible]	2		BTS-6800	Horiz. Output Screen-See Note 4
R88	7500Ω	20		2D-7500	Damper Filter-Wire Wound
R89	3.3Ω	½			HV Rect. Filament
R90	1 Meg.	1			HV Filter
R91	270Ω	2		BW-½-270	Focus Coil Shunt
R92	15Ω	½		BW-½-15	Bias Network

Note 1. Some models use two 47KΩ, 2 watt resistors in parallel to obtain required resistance and wattage.
Note 2. Some models use two 56KΩ, 2 watt resistors in parallel to obtain required resistance and wattage.
Note 3. Some models use a 270KΩ resistor in this application.
Note 4. Some models use a 8200Ω, 2 watt resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA MECK PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ① 1.8A	720VCT .200ADC	5VAC ② 3A	6.3VAC ② 2.7A	TP-10003B	P-6314 P-5014 ④		TP-400 F-633 ④
				SEC. 4 6.3VAC ② 6A				

④ Use for SEC. #3

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA MECK PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	1000Ω	TOA-10030A	A-8111 ①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans.
T3	295Ω Tap ② 102Ω	1Ω Tap ② .5Ω	TO-10028	A-8128	HVO-3	TFB-3	Hor. Output Trans.
		SEC. 2 0Ω					
T4	860Ω	13Ω	TO-10045	A-8112	A-3036	TSO-5 ①	Vert. Output Trans.
T5A	14Ω		TO-10026A	DY-7 ②	MD-70 ②		Hor. Deflection Coil
B	64Ω			DY-1 ③	MD-3 ③		Vert. Deflection Coil
T6	255Ω		TO-10025A				Focus Coil

① Drill one new mounting hole.
② Used in models KSA, XSPT, XTA, XTR.
③ Used in models XOB, XQA, XRA, XQR, XRPT.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA MECK PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	3800Ω	3.8Ω	430Ω	.7Ω	TO-10031	A-3877	A-2930	RO-6 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA MECK PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	3.8Ω	SR-10024		10A4A	
	CONE DIA.	V. C. DIA.				
SP2	9 3/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA MECK PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.200ADC	32Ω	1.5 Henries	LG-10021	C-2325 ①	C-2974	TR-4200①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MECK PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L2	Ant. Coil	.1Ω	.1Ω				
L3	Ant. Coil	.2Ω	.1Ω				
L4	RF Coil	0Ω					
L5	RF Coil	0Ω					
L6	Osc. Coil	0Ω					
L7	Osc. Coil	0Ω					
L8	Fil. Choke	.2Ω				CLA-.47	
L9	1st Video IF	.5Ω					
L10	Fil. Choke	0Ω					
L11	2nd Video IF	.1Ω					
L12	Fil. Choke	0Ω					
L13	RF Choke	4.1Ω					
L14	3rd Video IF	.1Ω					
L15	Fil. Choke	0Ω					
L16	RF Choke	4.1Ω					
L17	4th Video IF	.1Ω					
L18	Peaking	8Ω			19-1921		120 microhenries, yellow dot
L19	Peaking	20Ω					600 microhenries, blue dot
L20	Peaking	9.5Ω			19-1921 *		150 microhenries, wound on 18KΩ resistor
L21	Peaking	13Ω			19-1922		300 microhenries
L22	Sound IF	1.7Ω	1.7Ω				
L23	Ratio Det. Trans.	5Ω	.2Ω				
L24	Horiz. Osc.	67Ω					
L25	Horiz. Lin.	30Ω					
L26	Horiz. Size	.3Ω					

* Parallel with 18KΩ resistor.

MISCELLANEOUS

ITEM No.	PART NAME	MECK PART No.	NOTES
M1	RF Tuner	TT-10003	
M2	Fuse		5A 250V Type 3AG
M3	Fuse		.25A 250V Type 3AG
M4	Ion Trap		

MECK MODELS MM510T, MM512T, MM516C, T, XOB, XQA, XQR, XRA, XRPT, XSA, XSPT, XTA, XTR, XX900

RADIO **PARTS LIST AND DESCRIPTIONS**

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		MECK PART No.	STANDARD REPLACEMENT		
V20	Converter	12BE6	12BE6	7CH	
V21	IF Amp.	12BA6	12BA6	7BK	
V22	DET.-AVC-AF Amp.	12AT6	12AT6	7BT	
V23	Power Output	50C5	50C5	7CV	
V24	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MECK PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C87A	40		CL-100067A	AFH844G5A		UP42215C		TVL-3437	● Filter
B	20								■ Filter
C	20								▲ Filter
C88	.05	200	CP-14503	P288-05	DF-503	PTE4S5		TM-15-2	AVC Filter
C89A	100			SI100	D6-101	5W5T1	GP1K-100	19C11	Diode RF Filter †
B	100			SI100	D6-101	5W5T1	GP1K-100	19C11	Diode RF Filter †
C90	.005	600	CP-12502	P688-005	D6-502	PTE6D5	811-005	TM-25	Audio Coupling
C91	.005	600	CP-12502	P688-005	D6-502	PTE6D5	811-005	TM-25	Audio Coupling
C92	.02	400	CP-12203	P488-02	DF-203	PTE4S2		TM-12-4	Output Plate Byp.
C93	.15	400	CP-14154	P488-22		GT4P2		72P53	Line Isolation
C94	.05	400	CP-14503	P488-05	DF-503	PTE4S5		TM-15-4	Line Filter

† Items C89A, C89B and R97 are combined into one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MECK PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R93	1 Meg.	½	VC-12128				Volume control and switch

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MECK PART No.	IRC PART No.	
R94	22KΩ	½	RC-32202	BTS-22K	Osc. Grid
R95	68Ω	½	RC-30680	BW-½-68	IF Amp. Cathode
R96	2.2 Meg.	½	RC-32204	BTS-2.2 Meg.	AVC Network
R97	10KΩ	½	†	BTS-10K	Diode Filter
R98	10 Meg.	½	RC-31005	BTS-10 Meg.	AF Amp. Grid
R99	220KΩ	½	RC-32203	BTS-220K	AF Amp. Plate
R100	470KΩ	½	RC-34703	BTS-470K	Output Grid
R101	150Ω	½	RC-31500	BTS-150	Output Cathode
R102	470Ω	1	RC-44700	BTA-470	Filter
R103	220Ω	1	RC-42200	BTA-220	Filter

† Items R97, C89A and C89B are combined into one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MECK PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	2200Ω	3.8Ω	215Ω	.7Ω	TO-10032	A-3876	A-2928	RO-2	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MECK PART No.	MEISSNER PART No.	
L27	Loop Ant.	3Ω		ALP-10026		
L28	Osc. Coil	7.8Ω	6Ω	TRC-10013A		
L29	1st IF	15Ω	16Ω	TS-10043		
L30	2nd IF	15Ω	16Ω	TS-10043		

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA					REMARKS
	MECK PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M5		AC-AG-J	A-AG	W26B	A66U	

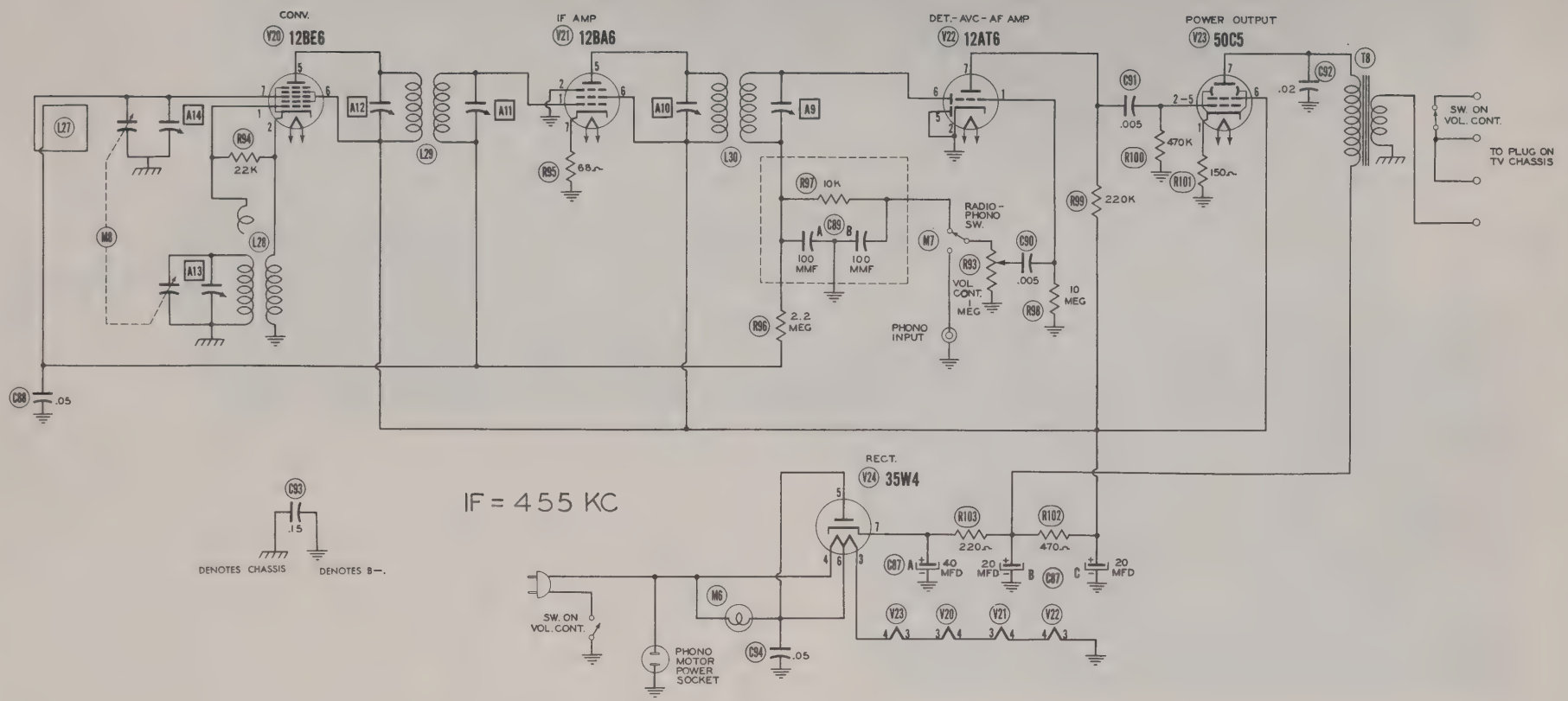
ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MECK PART No.		
M6	Bayonet	6-8	.15	Brown	DB-10000		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	MECK PART No.	NOTES
M7	Switch		Radio-Phono
M8	Tuning Cap.	CV-10025	24-455MMF, 31-222MMF



RADIO-PHONO SWITCH IN "RADIO" POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V20	12BE6	§-9.2VDC	0V.	35VAC	24VAC	95VDC	95VDC	-.1VDC
V21	12BA6	.1VDC	0V.	24VAC	12VAC	95VDC	95VDC	.9VDC
V22	12AT6	-.8VDC	0V.	0V.	12VAC	0V.	-.3VDC	50VDC
V23	50C5	5.7VDC	0V.	35VAC	85VAC	0V.	95VDC	100VDC
V24	35W4	0V.	117VAC	85VAC	117VAC	110VAC	110VAC	120VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V20	12BE6	22KΩ	7.8Ω	37Ω	25Ω	†705Ω	†690Ω	3.2 Meg.
V21	12BA6	3.2 Meg.	0Ω	25Ω	13Ω	†705Ω	†690Ω	68Ω
V22	12AT6	10 Meg.	0Ω	0Ω	13Ω	0Ω	1 Meg.	†220KΩ
V23	50C5	150Ω	470KΩ	37Ω	90Ω	470KΩ	†690Ω	†435Ω
V24	35W4	0Ω	115Ω	90Ω	115Ω	112Ω	112Ω	65KΩ

† MEASURED FROM PIN 7 OF V24.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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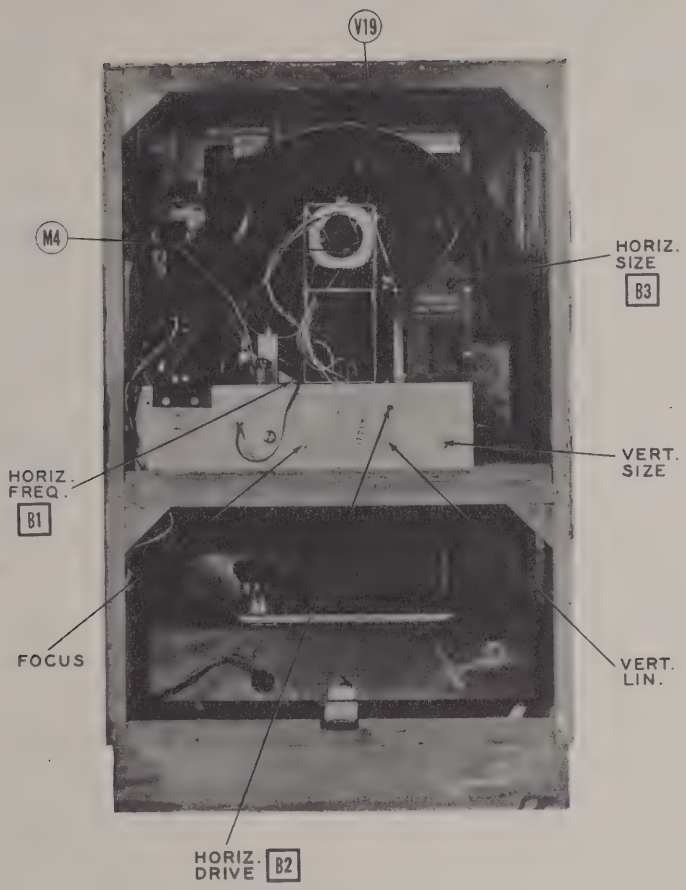
RADIO SCHEMATIC

MECK MODELS MM5107, MM5127, MM5165, 7, XOB, XOA, XOR, XRA, XRPT, XSA, XSPT, XTA, XTR, XX900



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station preferably a test pattern.

Turn the horizontal hold to the mid-position of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Turn the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right side of the picture.

Adjust the horizontal size slug (B3) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B4) for best linearity from left to right.

A slight readjustment of B2 may be necessary to obtain optimum results.

PHOTOFACT* Folder

*TRADE MARK

PHILCO MODELS
50-T1600, 50-T1632, 50-T1633
(CODES 122)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 50-T1600

PHILCO MODELS
50-T1600, 50-T1632, 50-T1633
(CODES 122)

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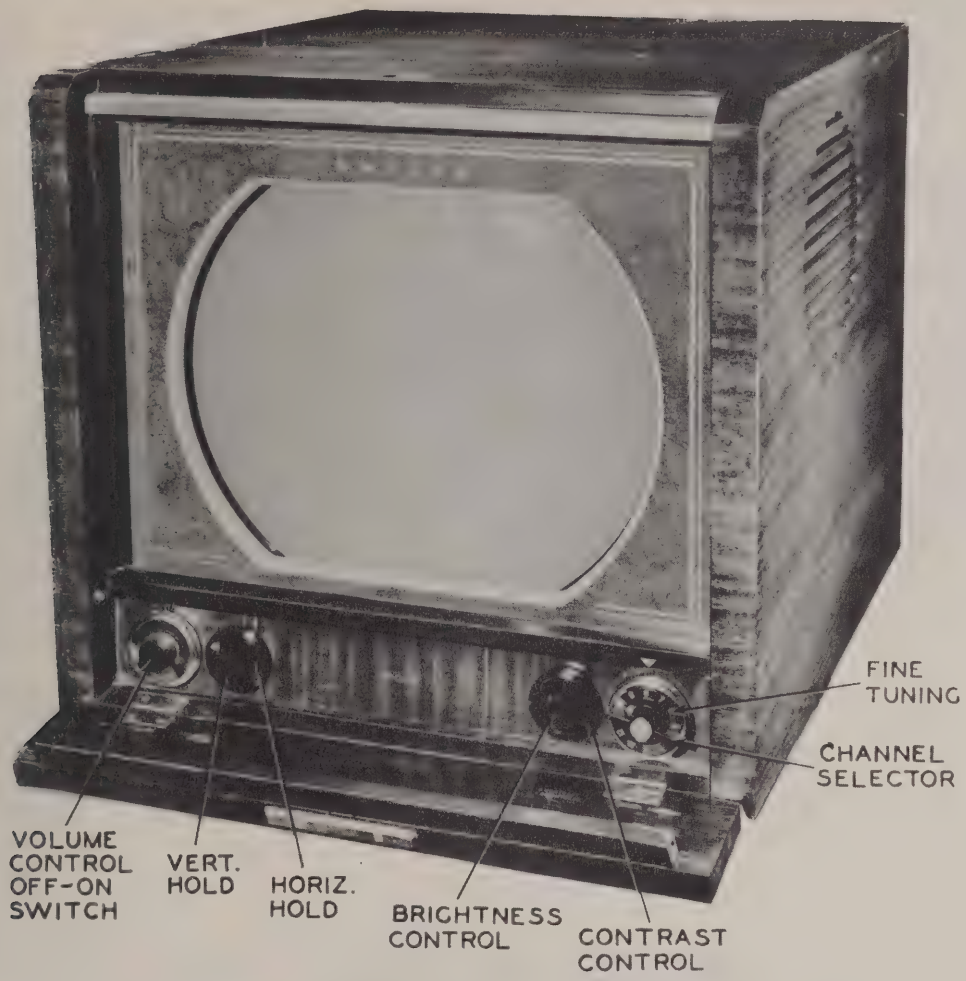
Date 10/50 Set No. 110—Folder No. 10

PHILCO MODELS 50T1600, 50T1632, 50T1633 (Codes 122)



PHILCO MODELS 50T1600, 50T1632, 50T1633 (Codes 122)

PHILCO MODEL 50-T1600

TRADE NAME	Philco Models 50-T1600, 50-T1632, 50-T1633 (Code 122)
MANUFACTURER	Philco Corp., Tioga and "C" Sts., Philadelphia, Pa.
TYPE SET	Television Receiver
TUBES	Twenty Five
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 2.25 Amp. at 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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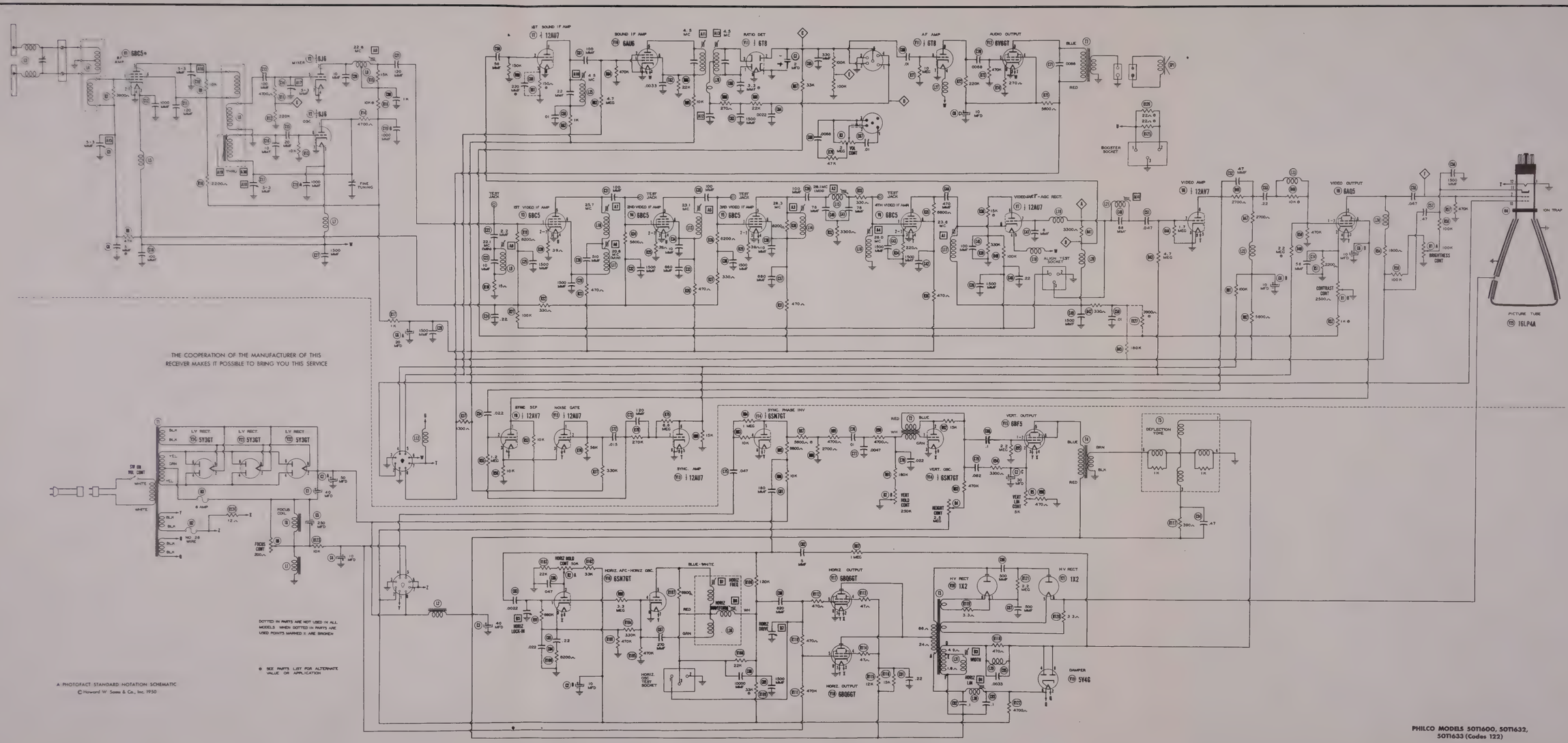
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SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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PHILCO MODELS 50T1600, 50T1632, 50T1633 (Codes 122)

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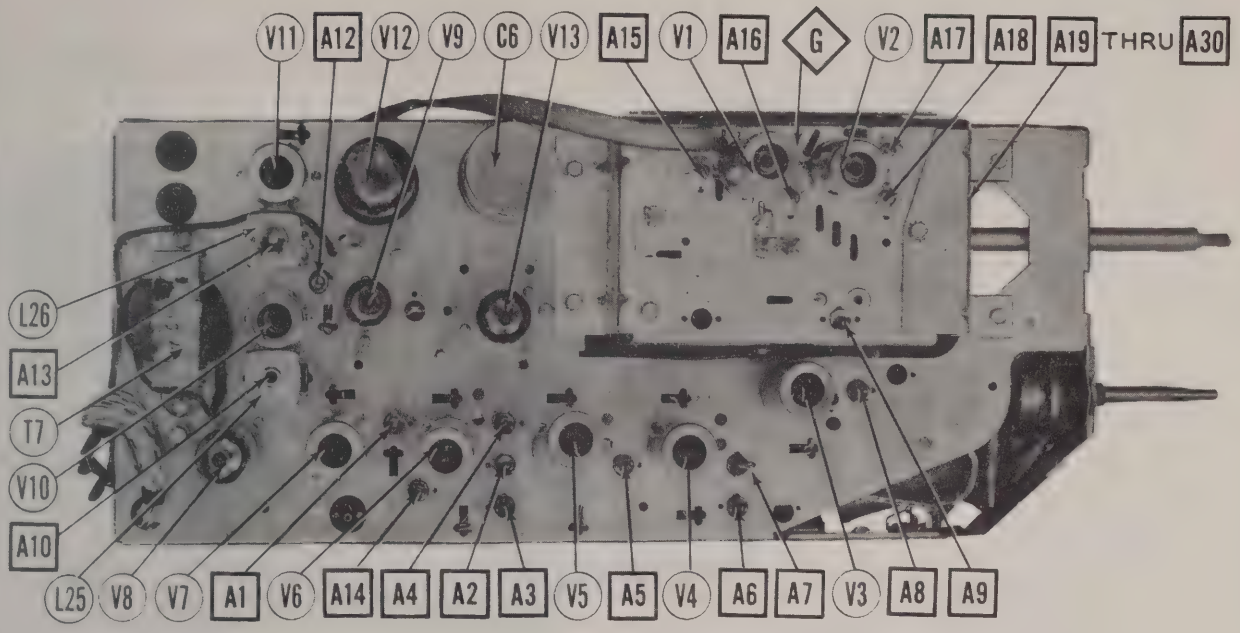
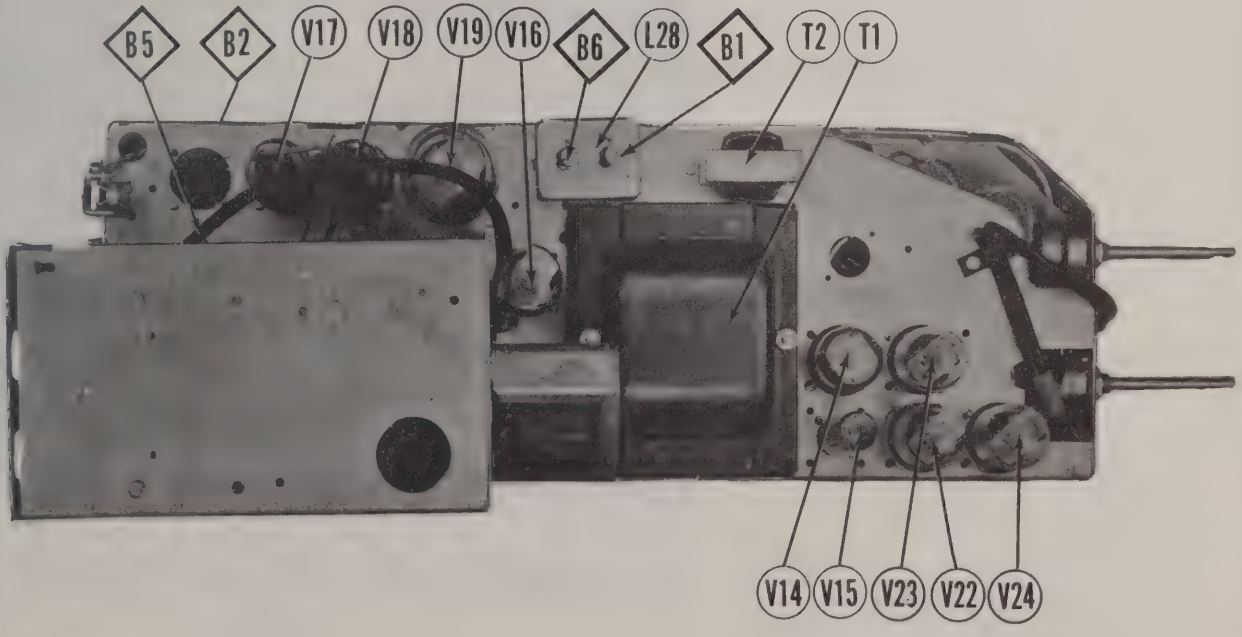
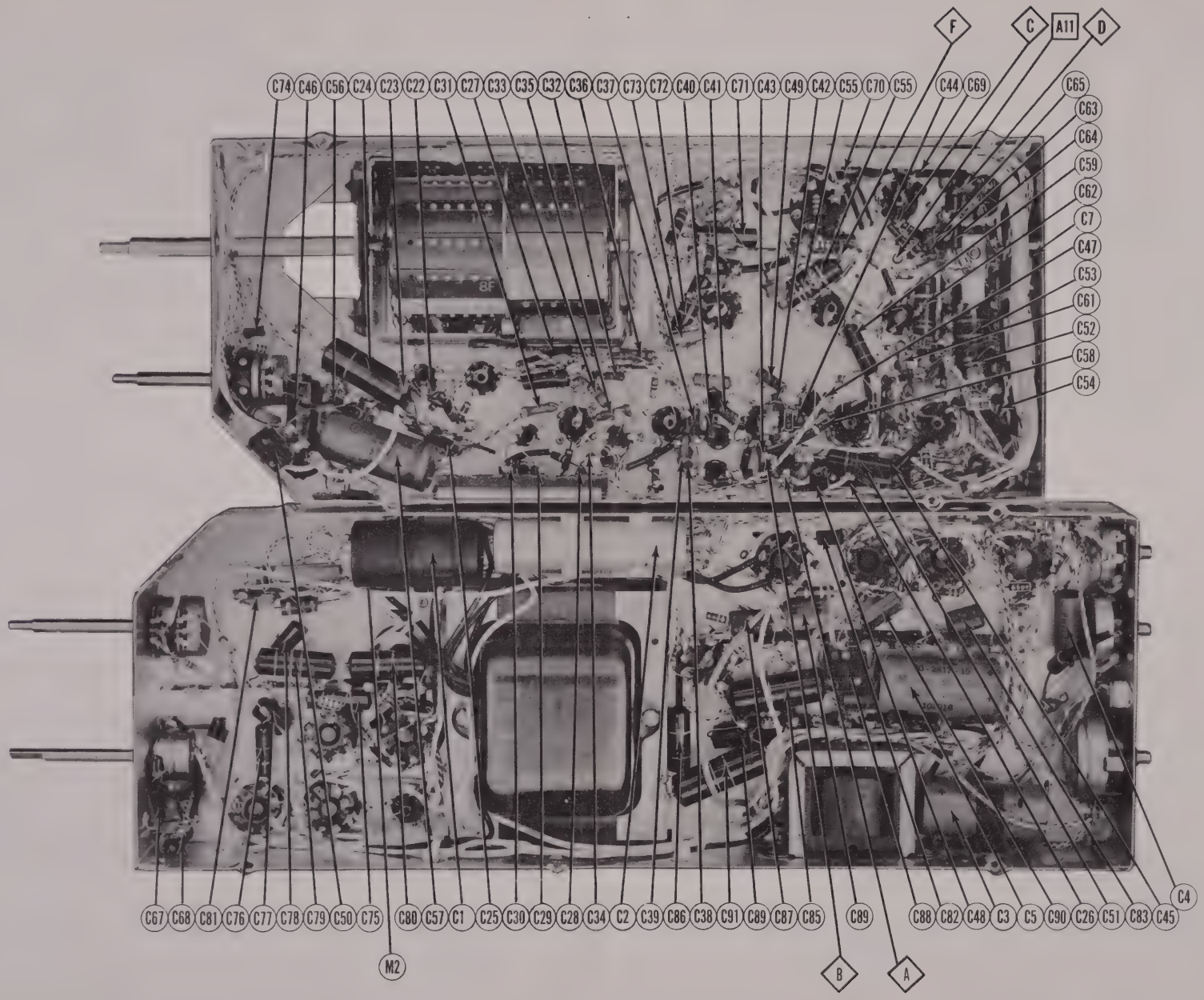


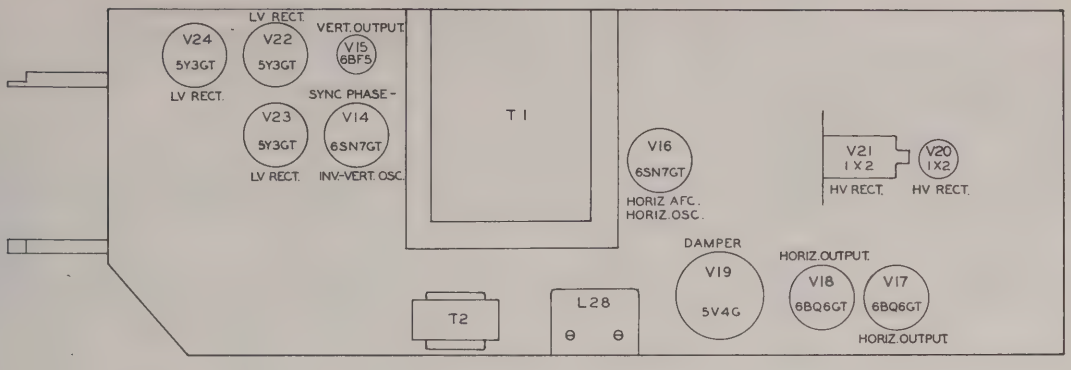
RF-IF CHASSIS-TOP VIEW



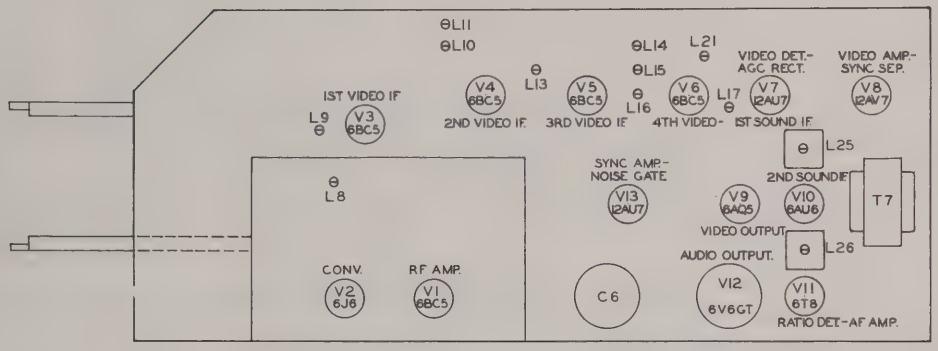
SWEEP CHASSIS-TOP VIEW

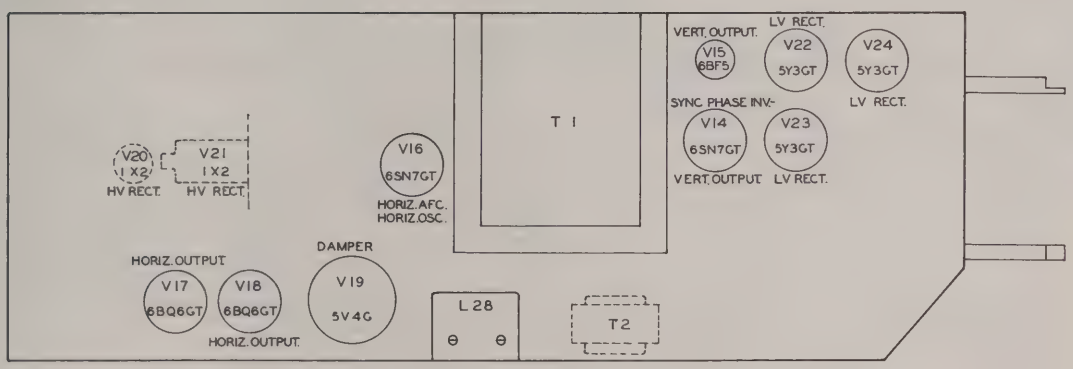


CHASSIS BOTTOM VIEW–CAPACITOR AND ALIGNMENT IDENTIFICATION

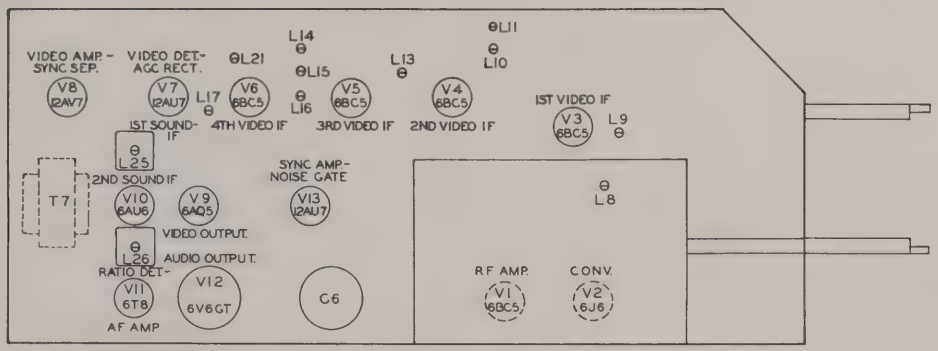


TOP VIEW





BOTTOM VIEW



TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If picture tube is to be removed when set is aligned the high voltage lead should be securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Remove the converter tube V2 from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indications.
Turn the contrast control fully counter-clockwise.
It should be noted that the common lead of the VTVM is at approximately 1.5 volts potential. Avoid grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over "dummy" converter tube (V2). Low side to chassis.	23.6MC (Unmod.)	Any	DC Probe to Point (A). Low side to Point (B).	A1	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum 3 volts reading.
2.	Direct	"	28.1MC	"	"	A2	Adjust for MINIMUM deflection.
3.	Direct	"	28.3MC	"	"	A3	Adjust for maximum deflection.
4.	Direct	"	26MC	"	"	A4	"
5.	Direct	"	23.1MC	"	"	A5	"
6.	Direct	"	20.6MC	"	"	A6	Adjust for MINIMUM deflection.
7.	Direct	"	25.7MC	"	"	A7	Adjust for maximum deflection.
8.	Direct	"	22.1MC	"	"	A8	Adjust for MINIMUM deflection.
9.	Direct	"	22.8MC	"	"	A9	Adjust for maximum deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Direct	High side to ungrounded tube shield floating over "dummy" converter tube (V2). Low side to chassis.	25MC (10MC SWP)	22.1MC 26.6MC	Any	Vert. Amp. thru 10KΩ to pin 7 (Grid) of 12AU7 (V8). Low side to chassis.		Check for response curve similar to figure 1. The 26.6MC marker should be at 40-60% of response. If necessary retouch A1, A3, A4, A5, A7 and A9 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point C to chassis. The junction of these two resistors is alignment Point E as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.001MFD	High side to pin 1 (Grid) of 6BC5 (V3). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (C). Common to chassis.	A10, A11, A12	Adjust for maximum deflection.
12.	.001MFD	"	"	"	DC Probe to Point (D). Common to Point (E).	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.001MFD	High side to pin 1 (Grid) of 6BC5 (V3). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A10, A11, A12	Disconnect stabilizer capacitor C7. Adjust for maximum amplitude and symmetry as per figure 2.
12.	.001MFD	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A13	Reconnect capacitor C7. Adjust A13 to place 4.5MC at center of crossover lines as per figure 3. SLIGHTLY retouch A-11 and A12 for maximum amplitude and straightness of crossover lines. After alignment is complete tune in a TV station and adjust A12 for MINIMUM noise.

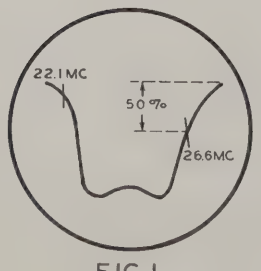


FIG.1

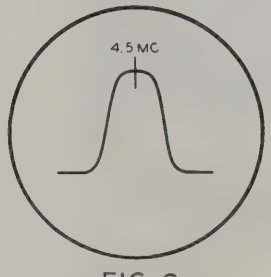


FIG. 2

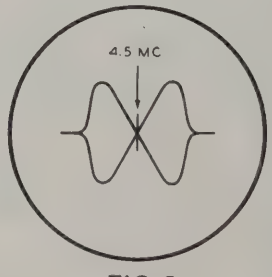


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	.001MFD	High side to pin 1 (Grid) of 6BC5 (V3). Low side to chassis.	Not used	4.5MC (400∿ Mod.)	Any	Vert. Amp. thru detector probe as shown in figure 4 to Point (F). Low side to chassis.	A14	Adjust for minimum 400∿ indication on scope. After alignment is completed tune in a TV station and adjust A14 for maximum vertical wedge definition.

RF AND CONVERTER ALIGNMENT

The RF portion of this receiver has been pre-set at the factory and is very stable. Adjustment of these circuits should not be attempted unless they are definitely known to be out of alignment.

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. to Point (G). Low side to chassis.	A15, A16, A17	Adjust for response curve similar to figure 5 with markers above 80%.
15.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check for response curve similar to figure 5. If markers fall below 70% on any channel, make slight adjustment of A15, A16, A17 with channel selector switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace original 6J6 in its socket.

Set the fine tuning control to the mid-position of its range.

Complete oscillator alignment may not be necessary. If a majority of the channels seem to be off frequency approximately the same amount, it may be possible to correct them in one step using A18. It should be noted that this is an all channel oscillator circuits adjustment and should not be adjusted for an individual channel. If adjustment of A18 will not bring all channels within the range of the fine tuning control, it will be necessary to adjust the individual channel oscillator adjustment screw for each channel that is off frequency. This adjustment is located to the right of the channel selector switch shaft.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A19	Adjust to place the sound marker as shown in figure 6. The video marker should be at 50% of response.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A20	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A21	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A22	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A23	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A24	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A25	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A26	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A27	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A28	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A29	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A30	

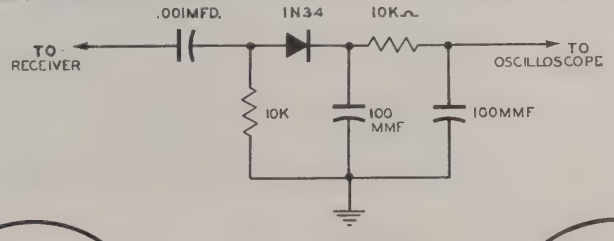


FIG.4

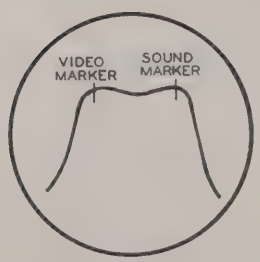


FIG.5

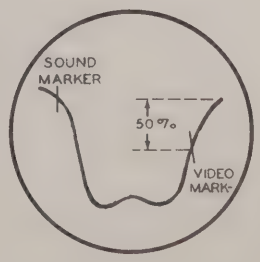


FIG.6

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.6VDC	0V.	6.3VAC	0V.	100VDC	100VDC	0V.		
V 2	6J6	65VDC	95VDC	6.3VAC	0V.	-1.2VDC	$-6VDC	0V.		
V 3	6BC5	-2VDC	.4VDC	0V.	6.3VAC	140VDC	140VDC	.4VDC		
V 4	6BC5	-.5VDC	.4VDC	0V.	6.3VAC	140VDC	140VDC	.4VDC		
V 5	6BC5	-.5VDC	.4VDC	0V.	6.3VAC	140VDC	140VDC	.4VDC		
V 6	6BC5	0V.	1.6VDC	0V.	6.3VAC	100VDC	140VDC	1.6VDC		
V 7	12AU7	130VDC	0V.	1.7VDC	6.3VAC	6.3VAC	-.6VDC	.6VDC	1.2VDC	0V.
V 8	12AV7	140VDC	-.1VDC	5.7VDC	6.3VAC	6.3VAC	140VDC	-.6VDC	0V.	0V.
V 9	6AQ5	-.6VDC	8.8VDC	6.3VAC	0V.	235VDC	140VDC	-.6VDC		
V 10	6AU6	-.6VDC	0V.	6.3VAC	0V.	70VDC	70VDC	0V.		
V 11	6T8	-1.5VDC	-4.8VDC	-1.5VDC	6.3VAC	0V.	0V.	0V.	-.6VDC	80VDC
V 12	6V6GT	0V.	0V.	225VDC	220VDC	0V.	140VDC	6.3VAC	10VDC	
V 13	12AU7	6VDC	6VDC	5.6VDC	6.3VAC	6.3VAC	22VDC	-.8VDC	0V.	0V.
V 14	6SN7GT	-22VDC	190VDC 75VDC	0V.	-.4VDC	60VDC	0V.	0V.	6.3VAC	
V 15	6BF5	0V.	20VDC 35VDC	0V.	6.3VAC	225VDC	225VDC	0V.		
V 16	6SN7GT	-3VDC	55VDC	-11VDC	-57VDC	225VDC	0V.	0V.	6.3VAC	
V 17	6BQ6GT	135VDC	6.3VAC	0V.	135VDC	-20VDC	-20VDC	0V.	0V.	TOP CAP *
V 18	6BQ6GT	190VDC	6.3VAC	0V.	135VDC	-20VDC	300VDC	0V.	0V.	TOP CAP *
V 19	5V4G	0V.	320VDC	0V.	235VDC	0V.	235VDC	0V.	320VDC	
V 20	1X2	* DO NOT MEASURE.								
V 21	1X2	* DO NOT MEASURE.								
V 22	5Y3GT	0V.	250VDC	0V.	250VAC	0V.	250VAC	-13VDC	250VDC	
V 23	5Y3GT	0V.	250VDC	18VDC	250VAC	-7VDC	250VAC	30VDC	250VDC	
V 24	5Y3GT	0V.	250VDC	0V.	250VAC	18VDC	250VAC	0V.	250VDC	
V 25	16LP4A	0V.	0V.	PIN 10 300VDC	PIN 11 120VDC	PIN 12 6.3VAC				

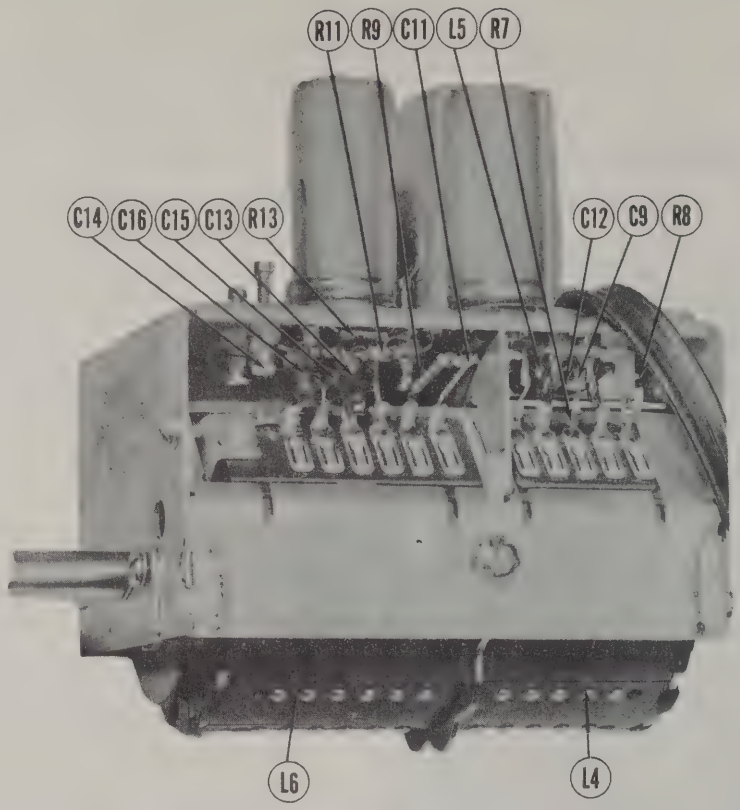
FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
$ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.

RESISTANCE READINGS

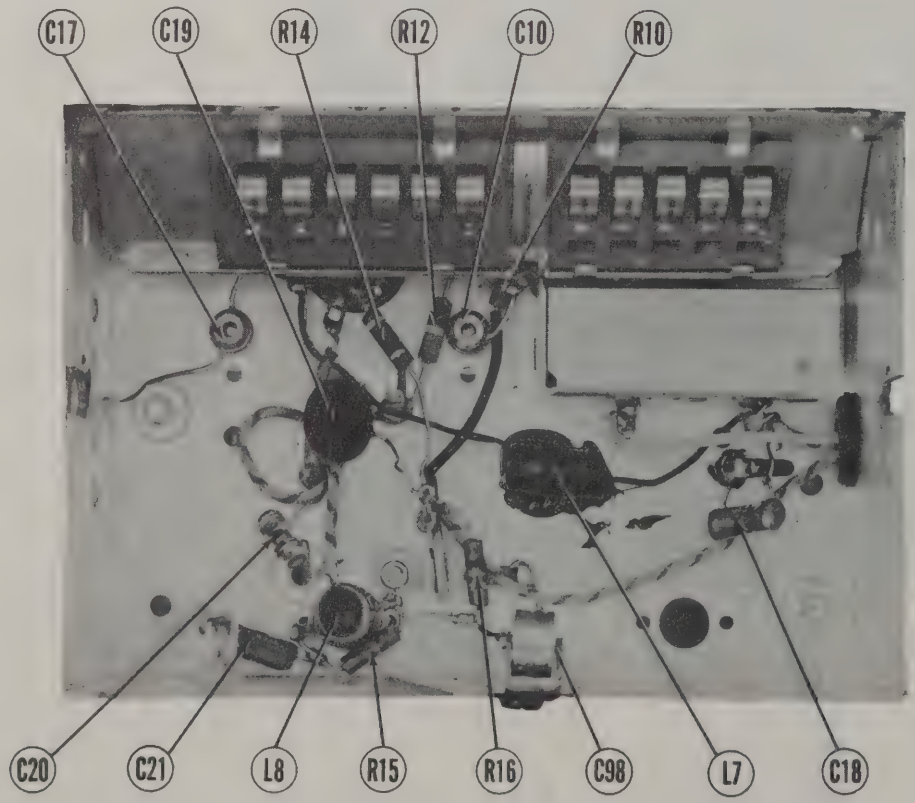
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	580KΩ	0Ω	.1Ω	0Ω	†4.5KΩ	†4.5KΩ	0Ω		
V 2	6J6	†7KΩ	†12KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6BC5	540KΩ	39Ω	0Ω	.2Ω	†1.8KΩ	†1.8KΩ	39Ω		
V 4	6BC5	535KΩ	39Ω	0Ω	.2Ω	†1.8KΩ	†1.8KΩ	39Ω		
V 5	6BC5	535KΩ	39Ω	0Ω	.2Ω	†1.8KΩ	†1.8KΩ	39Ω		
V 6	6BC5	.3Ω	220Ω	0Ω	.2Ω	†8.6KΩ	†1.8KΩ	220Ω		
V 7	12AU7	†2.3KΩ	150KΩ	150Ω	.2Ω	.2Ω	345KΩ	5KΩ	1.6KΩ	0Ω
V 8	12AV7	†11KΩ	8 Meg.	10KΩ	.1Ω	.1Ω	†11KΩ	900KΩ	0Ω	0Ω
V 9	6AQ5	430KΩ	1.2KΩ	.1Ω	0Ω	†1.8KΩ	†11KΩ	430KΩ		
V 10	6AU6	430KΩ	0Ω	.1Ω	0Ω	†9KΩ	†9KΩ	0Ω		
V 11	6T8	Inf.	34KΩ	Inf.	.2Ω	0Ω	Inf.	0Ω	10 Meg.	†225KΩ
V 12	6V6GT	Inf.	0Ω	†460Ω	†5.6KΩ	470KΩ	†1.3KΩ	.1Ω	270Ω	
V 13	12AU7	45KΩ	45KΩ	10KΩ	.1Ω	.1Ω	15KΩ	7 Meg.	0Ω	0Ω
V 14	6SN7GT	430KΩ	#475KΩ #2.9 Meg.	0Ω	†1 Meg.	†10KΩ	0Ω	.1Ω	.2Ω	
V 15	6BF5	2.2 Meg.	5.5KΩ 470Ω	.1Ω	.2Ω	†680Ω	†680Ω	2.2 Meg.		
V 16	6SN7GT	900KΩ	#90KΩ	300KΩ	310KΩ	#38KΩ	0Ω	.1Ω	.2Ω	
V 17	6BQ6GT	†7KΩ	.2Ω	Inf.	†7KΩ	480KΩ	500KΩ	.1Ω	0Ω	TOP CAP #25Ω
V 18	6BQ6GT	1.3 Meg.	.2Ω	Inf.	†7KΩ	480KΩ	#4.7KΩ	.1Ω	0Ω	TOP CAP #25Ω
V 19	5V4G	Inf.	100KΩ	Inf.	†75Ω	Inf.	†75Ω	Inf.	100KΩ	
V 20	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #110Ω
V 21	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	#Inf.
V 22	5Y3GT	Inf.	10KΩ	Inf.	4.2KΩ	Inf.	4.2KΩ	30Ω	10KΩ	
V 23	5Y3GT	Inf.	10KΩ	2.5KΩ	4.2KΩ	450KΩ	4.2KΩ	1.2KΩ	10KΩ	
V 24	5Y3GT	Inf.	10KΩ	Inf.	4.2KΩ	7.8KΩ	4.2KΩ	Inf.	10KΩ	
V 25	16LP4A	0Ω	470KΩ	PIN 10 4700Ω	PIN 11 170KΩ	PIN 12 .1Ω				

FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
† MEASURED FROM PIN 8 OF V22.
# MEASURED FROM PIN 8 OF V19.

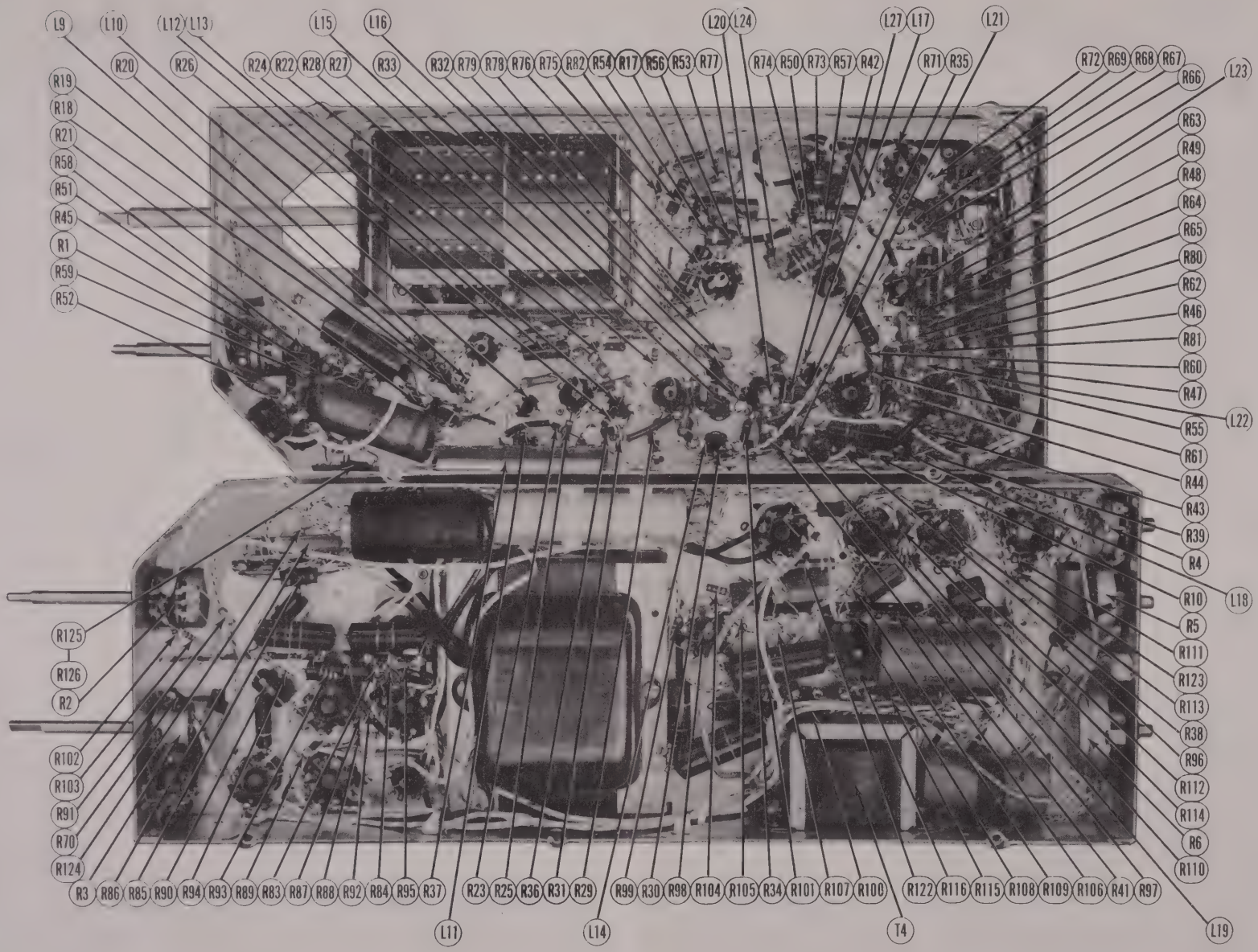
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



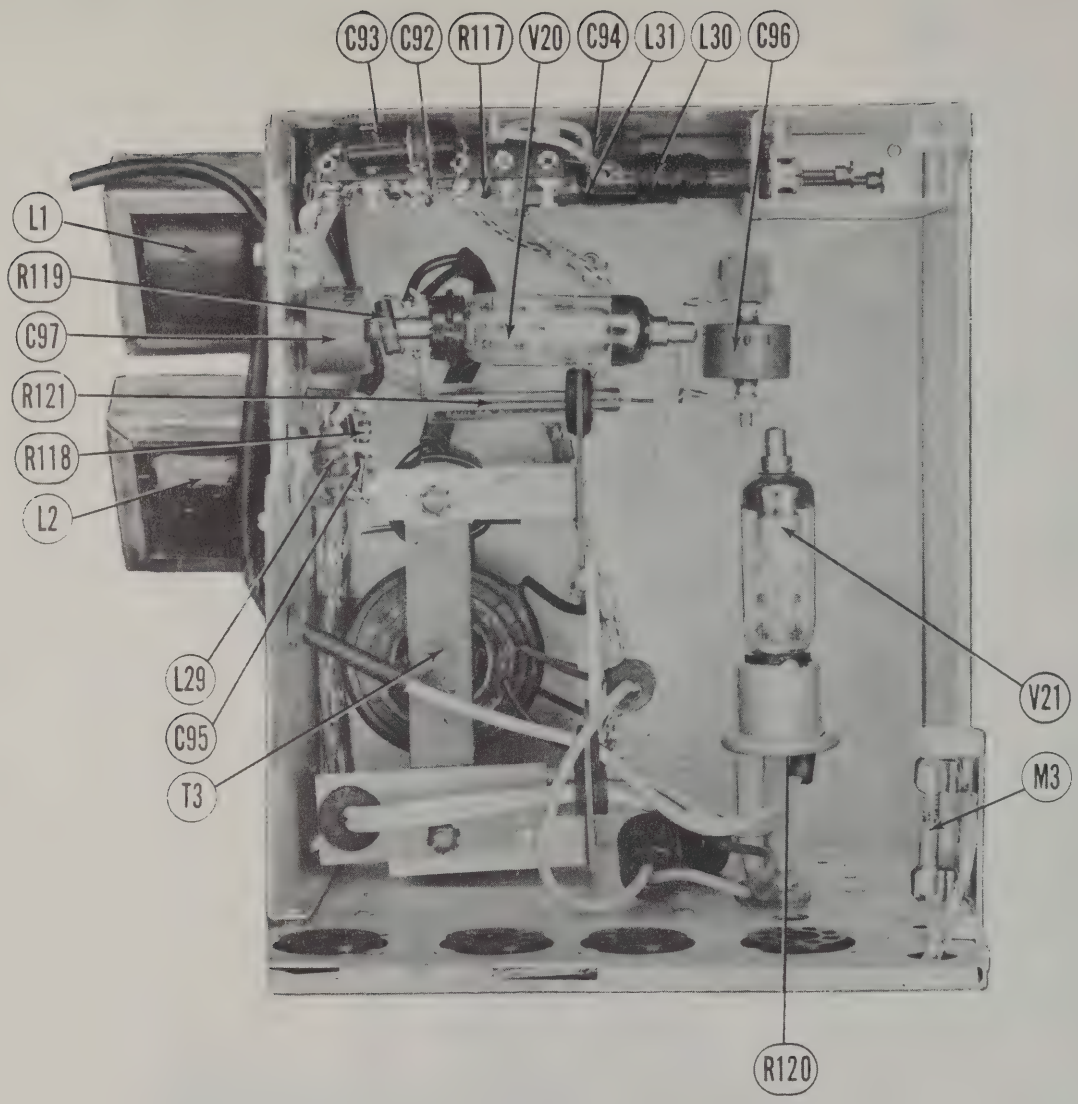
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



HIGH VOLTAGE SUPPLY-BOTTOM VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove seven push on type control knobs.
2. Remove ten wood screws holding rear cover. Remove rear cover.
3. Disconnect ground clamp.
4. Disconnect speaker at RF-IF chassis.
5. Disconnect yoke socket from HV chassis.
6. Disconnect built-in antenna.
7. Remove antenna terminal strip.
8. Disconnect HV lead to picture tube.
9. Remove four 1/4" hex head screws from RF-IF chassis. Remove chassis.
10. Remove five 1/4" hex head screws from power chassis. Remove chassis.
11. Remove four 11/32" hex nuts holding speaker in cabinet. Remove speaker.

PICTURE TUBE REMOVAL

1. Follow disassembly instructions above.
2. Remove three 7/16" hex nuts securing guard at front of tube.
3. Remove two rear brackets.
4. Remove picture tube.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1A	RF Amp.	6BC5	6BC5	7BD	
B	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6BC5	6BC5	7BD	
V4	2nd Video IF	6BC5	6BC5	7BD	
V5	3rd Video IF	6BC5	6BC5	7BD	
V6	4th Video IF	6BC5	6BC5	7BD	
V7	Video Det. -AGC Rect. -1st Sound IF Amp.	12AU7	12AU7	9A	
V8	Video Amp. -Sync. Sep.	12AV7	12AV7	9A	
V9	Video Output	6AQ5	6AQ5	7BZ	
V10	2nd Sound IF	6AU6	6AU6	7BK	
V11	Det. -AF Amp.	6T8	6T8	6E	
V12	Audio Output	6V6GT	6V6GT	7AC	
V13	2nd Sync. Amp. Noise Gate	12AU7	12AU7	9A	
V14	Sync. Phase Inv. - Vert. Osc.	6SN7GT	6SN7GT	8BD	
V15	Vert. Output	6BF5	6BF5	7BT	
V16	Hor. AFC-Hor. Osc.	6SN7GT	6SN7GT	8BD	
V17	Hor. Output	6BQ6GT	6BQ6GT	6AM	
V18	Hor. Output	6BQ6GT	6BQ6GT	6AM	
V19	Damper	5V4G	5V4G	5L	
V20	HV Rect.	1X2	1X2	7CB	
V21	HV Rect.	1X2	1X2	7CB	
V22	LV Rect.	5Y3GT	5Y3GT	5T	
V23	LV Rect.	5Y3GT	5Y3GT	5T	
V24	LV Rect.	5Y3GT	5Y3GT	5T	
V25	Picture Tube	16LP4A	16LP4A	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	40	350	30-2568-37	E3A145		UP2235		TVL-1621	Filter
C2A	50	350	30-2570-48	E3C242		UPT140535		TVL-3670	■ Filter
B	10	400				C3			▲ Decoupling
C	30	25							Vert. Output Cath.
C3	40	350	30-2417-13	PRS450/40		BR4045A		TVA-1611	Filter
C4	10	25	30-2417-8	PRS150/10		BR102A		TVA-1204	Filter
C5	250	50	30-2417-15	PRS50/100 $		BRH5025		TVA-1312	Focus Bypass *
C6A	20	350	30-2570-10	AF4444J		UP2111145			▲ Decoupling
B	10	350							■ Decoupling
C	10	350							▲ Decoupling
D	10	350							Decoupling
C7	2	50	30-2417-7	E26E6		BBR2-50		TVA-1301	Stabilizing Cap.
C8	5		30-1224-5	SI5NPO	TCZ-4.7		NPOK-5		Fixed Trimmer *
C9	.5-3		45-1696		829-3				Variable Trimmer
C10	.5-3		45-1696		829-3				Variable Trimmer
C11	120		30-1224-69	SI120	D6-121		GP2K-120	19C29	RF Decoupling
C12	1000		62-210001011	SI1000	D6-102		GP2L-001	19C1	RF Bypass
C13	100		30-1224-1	SI100N750	TCN-100		N750L-100	29C16	RF Coupling
C14	.5-3		45-1696		829-3				Variable Trimmer
C15	20		30-1224-43	SI20NPO	TCZ-20		NPOK-20		Osc. Grid Cap.
C16	10		30-1224-51	SI10N750	TCN-10		N750K-10	19C4	Fixed Trimmer
C17	.5-3		45-1697		829-3				Variable Grid
C18	100		30-1224-1	SI100	D6-101		GP1K-100	19C11	Filament Bypass
C19A	1000			BPD-2 x 001	DD-2-102		882-2 x 0015	29C7	Conv. Fil. Bypass
B	1000								RF Bypass
C20	10		30-1224-51	SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C21	120	500	30-1224-69	SI120	D6-121		GP2K-120	19C29	IF Coupling
C22	2.2		30-1221-4		TCZ-2.2				IF Coupling
C23	10		62-010009001	SI10	D6-100	5W5Q1	GP1K-10	19C19	Fixed Trimmer
C24	.22	200	45-3505-49	P488-22		GT2P25		TM-2-2	AGC Filter
C25	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C26	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C27	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	Fil. Bypass
C28	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C29	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st V. IF Dec.
C30	510	500	60-10515307	1469-0005	D6-501	5R5T1	GP2K-510	MS-35	Fixed Trimmer
C31	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C32	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C33	680		62-168001001	SI680	D6-680	1W5T7	GP2K-680	19C17	2nd V. IF Dec.
C34	10		62-010009001	SI10	D6-100	5W5Q1	GP1K-10	19C19	2nd V. IF Dec.
C35	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C36	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C37	680		62-168001001	SI680	D6-681	1W5T7	GP2K-680	19C17	3rd V. IF Dec.
C38	10		62-010009001	SI10	D6-100	5W5Q1	GP1K-10	19C19	3rd V. IF Dec.
C39	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C40	78		32-1224-61				N220K-78		Fixed Trimmer
C41	78		32-1224-61				N220K-78		Fixed Trimmer
C42	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Dec.
C43	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Cath.
C44	470		62-147001001	SI470	D6-471	5W5T5	GP2K-470	19C15	IF Coupling
C45	100		62-056409001	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Bypass
C46	.22	200	45-3505-49	P488-22		GT2P25		TM-2-2	AGC Filter
C47	8		30-1224-46	SI8.2NPO	D6-100	5W5Q1	NPOK-8.2	19C3	V. Diode Filter
C48	68		60-00685407	SI68	D6-680	5W5Q7	GP1K-68	19C10	Fixed Trimmer
C49	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C50	.01	100	45-3505-58	P488-01	D6-103	PTE4S1	811-01	TM-11-4	Bias Filter
C51	.047	200	45-3505-62	P288-047	DF-503	PTE4S5		TM-15-2	Video Coupling
C52	47		62-051009001	SI47	D6-470	5W5Q5	GP1K-47	19C25	Peaking
C53	.22	400	45-3505-49	P488-22		GT4P25		TM-2-4	Video Coupling
C54	.022	400	45-3505-43	P488-022	DF-203	PTE4S2		TM-12-4	Video Coupling
C55	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		TM-15-4	Video Coupling

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C56	1500		63-215001011	SI1500	D6-152	1WSD15	GP2L-0015	29C8	Pic. Tube Cath.
C57	.47	200	45-3505-4	P288-47		GT2P5		TM-5-2	Pic. Tube Cath.
C58	56		63-056409001	SI56	D6-560	5W5Q5	GP1K-56	19C28	S. IF Coupling
C59	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	811-01	TM-11-4	1st S. IF Dec.
C60	330		30-1324-20	SI330	D6-221	5W5T25	GP2K-220	19C13	1st S. IF Cath. *
C61	100		63-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	S. IF Coupling
C62	.0033	400	45-3505-55	P488-0033	D6-332	PTE6D3	GP2M-0033	TM-23	2nd S. IF Dec.
C63	1500		63-215001011	SI1500	D6-152	1W6D15	GP2L-0015	29C8	Diode Load Cap.
C64	.0022	400	45-3505-54	P488-0022	D6-222	PTE6D2	GP2M-0022	TM-22	De-emphasis
C65	330		63-133001001	SI330	D6-331	5W5T3	GP2K-330	19C14	RF Bypass
C66	3.3		30-1221	SI3.3NPO	TCZ-3.3		NPOK-3.3		Balancing *
C67	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	811-01	TM-11-4	Audio Coupling
C68	.0068	400	45-3505-91	P488-0068	D6-682	PTE6D6		TM-26	Tone Comp.
C69	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	811-01	TM-11-4	Audio Coupling
C70	.0068	400	45-3505-91	P488-0068	D6-682	PTE6D6		TM-26	Audio Coupling
C71	.0068	600	45-3505-57	P688-0068	D6-682	PTE6D6		TM-26	Output Plate Byp.
C72	.015	400	45-3505-59	P488-015		PTE6S15			Sync. Coupling
C73	130	500	60-10135237	1468-00015	D6-121	5W5T15	GP2K-120	1FM-315	Sync. Coupling
C74	56		45-3505-62	SI56	D6-560	5W5Q5	GP1K-56	19C28	V. Output Cath. *
C75	.047	200	45-3505-62	P488-047	DF-503	PTE4S5		TM-15-2	Sync. Coupling
C76	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	811-01	TM-11-4	Vert. Sync. Coup.
C77	.0047	200	45-3505-56	P288-0047	D6-472	PTE6D5	GP2M-0047	TM-25	Integrator Net.
C78	.022	300	45-3505-43	P488-022	DF-203	PTE4S2		TM-12-2	Integrator Net.
C79	.082	400	30-4651-3						Vert. Discharge
C80	.1	400	45-3505-47	P488-1	DF-104	PTE4P1		TM-1-4	Vert. Sweep Coup.
C81	180	500	60-10125237	1468-00015	D6-181	5W5T15	GP2K-180	1FM-315	Hor. Sync. Coup. †
C82	5	500	60-90505007	1469-000005	TCZ-4.7	5R5Y5	NPOK-5	MS-55	Hor. Feedback
C83	.0022	600	45-3505-45	P688-0022	D6-222	PTE6D2	GP2M-0022	TM-22	Hor. Sync. Coupling
C84	.022	200	45-3505-43	P488-022	DF-203	PTE4S2		TM-12-2	AFC Filter
C85	.22	200	45-3505-49	P488-22		GT2P25		TM-2-2	AFC Filter
C86	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		TM-15-4	Hor. AFC Plate Bypass
C87	270	500	60-10275407	1469-00025	D6-271	5R5T25	GP2K-270	MS-325	Hor. Osc. Grid
C88	10000	500	45-3505-41	1467-01		1D3S1		1FM-11	Fixed Trimmer
C89	1500	500	60-20155404	1467-0015	D6-152	1W5D15	GP2L-0015	1FM-215	Hor. Discharge
C90	820	500	60-20125404	1467-001		1W5T8		MS-38	Hor. Sweep Coup. †
C91	.22	400	45-3505-49	P488-22		GT4P25		TM-2-4	Hor. Output Screen
C92	.1	200	45-3505-64	P288-1		PTE4P1		TM-1-2	Damper Filter
C93	.1	200	45-3505-64	P288-1		PTE4P1		TM-1-2	Damper Filter
C94	.47	200	45-3505-34	P288-47		GT2P5		TM-5-2	Hor. Sweep Coup.
C95	.0033	400	45-3505-55	P688-0033		PTE6D3	GP2M-0033	TM-23	Hor. Sweep Coup.
C96	500	10000	30-1229-4	HV10C	TV3-501				Voltage Doubler Cap.
C97	500	10000	30-1229-4	HV10C	TV3-501				HV Filter
C98	1000			BPD-001	DD-103		811-001	19C1	Conv. Plate Dec.

* Not used in all models.
† Some models use 120MMF in this application.
‡ Some models use 1200MMF in this application.
§ Use two in parallel.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	100KΩ	½	33-5563-25		RTV-108		Brightness control-front
B	2500Ω	2					Contrast control-Wire Wound-rear
R2A	50KΩ	½		Concentrikit			
B	250KΩ	½	33-5563-24	B11-123 * B11-130 *	RTV-107		Horiz. hold control-front Vert. hold control-rear
C	Shaft End			E-187 *			Attach per instr. in "Concentrikit".
R3A	2 Meg.	½	33-5564-9	Q18-139X		BT-78-S	Volume control-tapped at 1 Meg.
B	Shaft		Not Req.	Not Req.		Not Req.	Attach to R3A per instructions
C	Switch		Not Req.	76-1		Not Req.	Attach to R3A per instructions
R4A	2.5 Meg.	½	33-5565-10	Q11-239	AM-84-S	AN-83	Height control
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Attach to R4A per instructions
R5	5000Ω	2	33-5546-10	W-5000 †	43-5000 †	VK-135 †	Vert. linearity control-Wire Wound
R6	200Ω	4	33-5548-13		RTV-60	SV-918	Focus control-Wire Wound

* Additional parts to be used with "Concentrikit".
† File screw driver slot in shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R7	3900Ω	½	66-2398340	BTS-3900	RF Amp. Grid Coil Shunt
R8	47KΩ 20%	½	66-3478340	BTS-47K	AGC Network
R9	10KΩ	½	66-3108340		RF Amp. Plate Coil Shunt
R10	2200Ω 20%	½	66-2228340	BTS-2200	RF Amp. Decoupling
R11	4700Ω	½	66-2478340	BTS-4700	Conv. Grid
R12	220KΩ 20%	½	66-4228340		Conv. Grid
R13	10KΩ	½	66-3108340		Osc. Plate
R14	4700Ω	½	66-2478340	BTS-4700	Osc. Plate
R15	15KΩ 20%	½	66-3158340		Conv. Plate Coil Shunt
R16	10KΩ	½	66-3108340		Conv. Plate Decoupling-See Note 1
R17	1000Ω 20%	1	66-2104340	BTA-1000	Decoupling
R18	15Ω	½	66-0158340		Trap Loading
R19	8200Ω 5%	½	66-2828340		1st Video IF Amp. Grid
R20	39Ω	½	66-0398340		1st Video IF Amp. Cathode
R21	100KΩ	½	66-4108340	BTS-100K	AGC Network
R22	330Ω	½	66-1338340	BTS-330	AGC Network
R23	470Ω 20%	½	66-1478340	BTS-470	1st Video IF Amp. Decoupling
R24	5600Ω 5%	½	66-2568340	BTS-5600-5%	2nd Video IF Amp. Grid
R25	39Ω	½	66-0398340		2nd Video IF Amp. Cathode
R26	470Ω	½	66-1478340	BTS-470	2nd Video IF Amp. Decoupling
R27	330Ω	½	66-1338340	BTS-330	AGC Network
R28	62000Ω 5%	½	66-2628340		3rd Video IF Amp. Grid-See Note 9
R29	39Ω	½	66-0398340		3rd Video IF Amp. Cathode
R30	8200Ω 5%	½	66-2828340		3rd Video IF Amp. Plate Coil Shunt
R31	470Ω 20%	½	66-1478340	BTS-470	3rd Video IF Amp. Decoupling
R32	3300Ω 5%	1	66-2333240	BTA-3300-5%	IF Filter Network
R33	330Ω	½	66-1338340		Parasitic Suppressor

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
R34	220Ω	½	66-1228340	BTS-220	4th Video IF Amp. Cathode
R35	6800Ω 5%	1	66-2688340	BTA-6800-5%	4th Video IF Amp. Plate
R36	470Ω 20%	½	66-1478340	BTS-470	4th Video IF Amp. Decoupling
R37	13000Ω	9	33-3435-31		Voltage Dropping-Wire Wound
R38	15KΩ	½	66-3158340	BTS-15K	AGC Diode Load-See Note 1
R39	330KΩ	½	66-4338340	BTS-330K	AGC Diode Load
R40	100KΩ	½	66-4108340	BTS-100K	AGC Diode Filter
R41	3300Ω	½	66-2338340	BTS-3300	Video Det. Diode Load
R42	330Ω	½	66-1338340	BTS-330	Bias Network
R43	4.7 Meg.	½	66-5478340	BTS-4.7 Meg.	Bias Network
R44	1.2 Meg.	½	66-5128340	BTS-1.2 Meg.	Video Amp. Grid
R45	180KΩ	½	66-4188340	BTS-180K	Bias Network-See Note 2
R46	2700Ω	½	66-2778340	BTS-2700	Video Amp. Plate
R47	2700Ω	½	66-2278340	BTS-2700	Video Amp. Plate
R48	10KΩ 20%	½	66-3108340	BTS-10K	Video Peaking Coil Shunt-See Note 3
R49	2.2 Meg.	½	66-5228340	BTS-2.2 Meg.	Bias Network-See Note 4
R50	470KΩ	½	66-4478340	BTS-470K	Video Output Grid
R51	2200Ω	½	66-2228340	BTS-2200	Video Output Cathode
R52	1000Ω	1	66-2104340	BTA-1000	Voltage Divider-See Note 5
R53	10KΩ	½	66-3108340	BTS-10K	Video Output Screen
R54	1800Ω	2	66-2185340	BTS-1800	Video Output Plate
R55	1.2 Meg.	½	66-5128340	BTS-1.2 Meg.	Sync. Sep. Grid
R56	10KΩ	½	66-3108340	BTS-10K	Sync. Sep. Cathode
R57	470KΩ	½	66-4478340	BTS-470K	Picture Tube Grid
R58	100KΩ	½	66-4108340	BTS-100K	Picture Tube Cathode
R59	100KΩ	½	66-4108340	BTS-100K	Voltage Divider
R60	150KΩ 20%	½	66-4158340	BTS-150K	1st Sound IF Amp. Grid
R61	150Ω	½	66-1158340	BTS-150	1st Sound IF Amp. Cathode-See Note 6
R62	1000Ω 20%	½	66-2104340	BTS-1000	1st Sound IF Amp. Plate Decoupling
R63	4.7 Meg.	½	66-5478340	BTS-4.7 Meg.	Bias Network
R64	470KΩ	½	66-4478340	BTS-470K	2nd Sound IF Amp. Grid
R65	10KΩ	2	66-3105340	BTS-10K	2nd Sound IF Amp. Decoupling
R66	22KΩ	½	66-3228340	BTS-22K	Voltage Divider
R67	33KΩ	½	66-3338340	BTS-33K	Ratio Det. Diode Load
R68	270Ω	½	66-1278340	BTS-270	Balancing
R69	22KΩ	½	66-3228340	BTS-22K	De-emphasis
R70	47KΩ 20%	½	66-3478340	BTS-47K	Tone Compensation
R71	10 Meg. 20%	½	66-6108340	BTS-10 Meg.	AF Amp. Grid
R72	220KΩ	½	66-4228340	BTS-220K	AF Amp. Plate
R73	470KΩ	½	66-4478340	BTS-470K	Audio Output Grid
R74	270KΩ	1	66-4274340	BTA-270K	Audio Output Cathode-Wire Wound
R75	5600Ω	½	66-2568340	BTS-5600	Decoupling
R76	56KΩ 5%	½	66-3564340	BTS-56K-5%	Noise Gate Load
R77	330KΩ 5%	½	66-4338240	BTS-330K-5%	Voltage Divider
R78	270KΩ 20%	½	66-4278340	BTS-270K	Sync. Amp. Grid
R79	6.8 Meg.	½	66-5688340	BTS-6.8 Meg.	Voltage Divider
R80	15KΩ	½	66-3158340	BTS-15K	Voltage Divider
R81	100KΩ	1	66-4104340	BTA-100K	Sync. Amp. Plate
R82	5600Ω	1	66-2564340	BTA-5600	Decoupling
R83	10KΩ	½	66-3108340	BTS-10K	Isolation
R84	1 Meg.	½	66-5108340	BTS-1 Meg.	Sync. Phase Inv. Grid
R85	6800Ω	2	66-2685351	BTB-6800	Sync. Phase Inv. Plate
R86	10KΩ	2	66-3105340	BTB-10K	Sync. Phase Inv. Plate
R87	5600Ω	½	66-2568340	BTS-5600	Voltage Divider-See Note 7
R88	2700Ω	½	66-2278340	BTS-2700	Voltage Divider
R89	4700Ω	½	66-2478340	BTS-4700	Integrator
R90	4700Ω	½	66-2478340	BTS-4700	Integrator
R91	180KΩ	½	66-4188340	BTS-180K	Vert. Osc. Grid
R92	15KΩ	½	66-3158340	BTS-15K	Vert. Osc. Transformer Shunt
R93	470KΩ	½	66-4478340	BTS-470K	Vert. Osc. Plate
R94	3300Ω	½	66-2338340	BTS-3300	Vert. Peaking
R95	2.2 Meg. ±10%	½	66-5228340	BTS-2.2 Meg.	Vert. Output Grid
R96	470Ω	2	66-1475340	BTB-470	Vert. Output Cathode
R97	1 Meg.	½	66-5108340	BTS-1 Meg.	Feedback
R98	3.3 Meg.	½	66-5338340	BTS-3.3 Meg.	Voltage Divider
R99	680KΩ	½	66-4688340	BTS-680K	Horiz. AFC Grid
R100	8200Ω	½	66-2828340	BTS-8200	Horiz. AFC Fliter Network
R101	470KΩ 5%	½	66-4478340	BTS-470K-5%	Horiz. AFC Cathode
R102	33KΩ	½	66-3338340	BTS-33K	Voltage Divider
R103	22KΩ	½	66-3228340	BTS-22K	Voltage Divider
R104	330KΩ 5%	½	66-4338340	BTS-330K-5%	Voltage Divider
R105	470KΩ 5%	½	66-4478340	BTS-470K-5%	Horiz. Osc. Grid
R106	120KΩ	½	66-4128340	BTS-120K	Horiz. AFC Fliter Network
R107	6800Ω	½	66-2688340	BTS-6800	Horiz. Osc. Transformer Shunt
R108	22KΩ	½	66-3228340	BTS-22K	Horiz. Osc. Transformer Shunt
R109	33KΩ	½	66-3338340	BTS-33K	Horiz. Osc. Plate-See Note 8
R110	470Ω 20%	½	66-1478340		Parasitic Suppressor
R111	470KΩ	½	66-4478340	BTS-470K	Horiz. Output Grid
R112	470Ω 20%	½	66-1478340		Parasitic Suppressor
R113	47Ω	½	66-0478340		Parasitic Suppressor-Wire Wound
R114	47Ω	½	66-0478340		Parasitic Suppressor-Wire Wound
R115	12KΩ	2	66-3125340	BTB-12K	Horiz. Output Screen
R116	15KΩ	2	66-3155340	BTB-15K	Horiz. Output Screen
R117	390Ω	½	66-1398340	BTS-390	Horiz. Centering Network
R118	47Ω	½	66-1478340		Suppressor Coil Shunt
R119	3.3Ω 20%	½	66-9333540		HV Rect. Filament-Wire Wound
R120	3.3Ω 20%	½	66-9333540		HV Rect. Filament-Wire Wound
R121	2.2 Meg.	2	66-5225340		HV Rect. Load
R122	4700Ω	1	66-2474340	BTA-4700	Decoupling
R123	10KΩ	½	66-3108340	BTS-10K	Bias Network
R124	.12Ω	½			Filament Dropping-Length of Wire
R125	22Ω 20%	½	66-0228340	BW-½-22	Dropping-See Note 1
R126	22Ω 20%	½	66-0228340	BW-½-22	Dropping-See Note 1
R127	3900Ω	½	66-2398340	BTS-3900	Bias Network-See Note 1

Note 1. Not used in all models.
Note 2. Some models use a 100KΩ resistor in this application.
Note 3. Some models use a 15KΩ resistor in this application.
Note 4. Some models use a 1.8 Meg. resistor in this application.
Note 5. Some models use a 4700 resistor in this application.
Note 6. Some models use a 1800Ω resistor in this application.
Note 7. Some models use a 10KΩ resistor in this application.
Note 8. Some models use a 56KΩ resistor in this application.
Note 9. Some models use a 5600Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⑤ 2.25A	540VCT .340ADC	5VAC ⑤ 6A	5VAC ⑤ 2A SEC. 4 6.3VAC ⑤ 10A	32-8429			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T3	190Ω	365Ω	32-8431	A-8111	A-3000		Vert. Block Osc. Trans.
T3	110Ω Tap ⑤ 24Ω	6.7Ω Tap ⑤ 1.8Ω SEC. 2 0Ω SEC. 3 0Ω	32-8428			TFB-4	Hor. Output Trans.
T4	500Ω	21Ω	32-8432				Vert. Output Trans.
T5A	15Ω				MD-12 ④		Hor. Deflection Coil
B	68Ω						Vert. Deflection Coil
T6	78Ω		76-5725				Focus Coil

④ Add two resistors.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	3300Ω	3.5Ω	360Ω	.5Ω	32-8242-9	A-3823	A-3018	RO-6 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA PHILCO PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	PM	3.5Ω	36-1626-5 ②		8A21	② Used in model 50-T1600 only.
B	PM		36-1610-6 ③			③ Used in models 50-T1632 and 50-T1633.
	CONE DIA.	V. C. DIA.				
SP2A	7 1/4"	1"				
B	9 1/2"					

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ↺)	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.180ADC	65Ω	2 Henries	32-8435	C-2325 ①	C-2974	TR-3300①	① Drill one new mounting hole.
L2	.340ADC	180Ω	1.4 Henries	32-8430		C-2996 ①		

COILS (RF-IF)

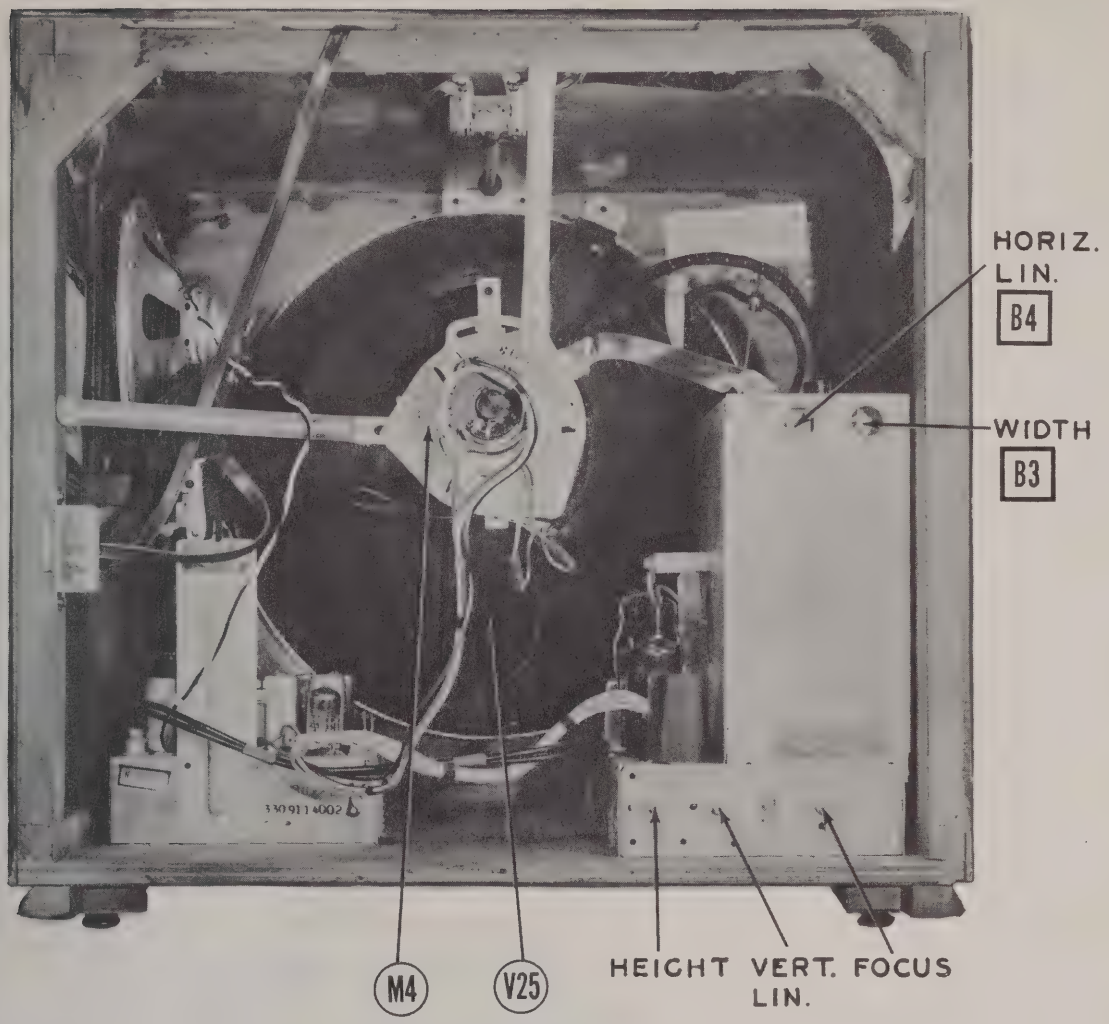
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	MEISSNER PART No.	NOTES
L3	Ant. Loading	0Ω	0Ω	76-5413		
L4	Ant. Coils	0Ω	0Ω	See Misc.		
L5	Fil. Choke	0Ω		45-6579		
L6	RF, Mixer Grid & Osc.	0Ω		See Misc.		
L7	Fil. Choke	0Ω		45-6580		
L8	1st Video IF	1.1Ω		45-1695		Tap at .6Ω
L9	Sound Trap	.3Ω		32-4234-17		
L10	2nd Video IF	.3Ω		32-4234-13		
L11	Adj. Channel Video Trap	0Ω		32-4234-19		
L12	Fil. Choke	.1Ω		32-4112-15		
L13	3rd Video IF	.3Ω		32-4234-13		
L14	4th Video IF Plate Coil	.3Ω		32-4234-3		
L15	Adj. Channel Sound Trap	.1Ω		32-4234-12		
L16	4th Video IF Grid Coil	.3Ω		32-4234-3		
L17	5th Video IF	.3Ω		32-4234-13		
L18	Fil. Choke	.1Ω		32-4112-15		
L19	Peaking	2.2Ω		32-4143-16		40 microhenries
L20	Peaking	3.7Ω		32-4467-3	19-1920	100 microhenries, (white-yellow-white dots)
L21	4.5MC Trap	2.7Ω		32-4463-3		
L22	Peaking	4.3Ω		32-4143-13	19-1921	189 microhenries
L23	Peaking	4.1Ω		32-4143-12	19-1921	125 microhenries (blue-yellow dots)
L24	Peaking	5Ω		32-4143-12	19-1921	125 microhenries (orange-orange-white dots)
L25	Sound IF	5Ω		32-4449A		
L26	Ratio Det. Trans.	5.4Ω	.8Ω	32-4450		
L27	Fil. Choke	.1Ω		32-4112-15		
L28	Horiz. Osc. Trans.	87Ω	47Ω	32-4470		
L29	Para. Supp.	3.7Ω		32-4143-5		100 microhenries
L30	Horiz. Lin.	7.8Ω		32-4468-1		
L31	Width Coil	1.2Ω		32-4468		

PHILCO MODELS 50T1600, 50T1632, 50T1633 (Codes 122)

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	RF Tuner	76-54115	
M2	Fuse		Length of #26 copper wire
M3	Fuse	45-2656-18	.6A 125V Type MDL
M4	Ion Trap	76-6077	
	Trimmer	31-6473-18	Balancing, Horiz. lock
	Safety Glass	54-7943-9	Model 50-T1600
	Safety Glass	54-7943-6	Model 50-T1632
	Safety Glass	54-7943-7	Model 50-T1633
	Cabinet	10798-1	Model 50-T1600
	Cabinet	10792-1	Model 50-T1632
	Cabinet	10793-1	Model 50-T1633
	Knob	56-7807-1	Channel selector
	Knob	76-5794	Fine tuning
	Knob	54-4768	Brightness, Vert. hold
	Knob	54-4769	Contrast, Horiz. hold
	Knob	76-5795	Volume
	Knob	54-4750	Antenna tuning
	Ant. Coil	32-4436-2	Channel 2
	Ant. Coil	32-4436-3	Channel 3
	Ant. Coil	32-4436-4	Channel 4
	Ant. Coil	32-4436-5	Channel 5
	Ant. Coil	32-4436-6	Channel 6
	Ant. Coil	32-4436-7	Channel 7
	Ant. Coil	32-4436-8	Channel 8
	Ant. Coil	32-4436-9	Channel 9
	Ant. Coil	32-4436-10	Channel 10
	Ant. Coil	32-4436-11	Channel 11
	Ant. Coil	32-4436-12	Channel 12
	Ant. Coil	32-4436-13	Channel 13
	RF, Mixer Grid & Osc.	32-4437-2	Channel 2
	RF, Mixer Grid & Osc.	32-4437-3	Channel 3
	RF, Mixer Grid & Osc.	32-4437-4	Channel 4
	RF, Mixer Grid & Osc.	32-4437-5	Channel 5
	RF, Mixer Grid & Osc.	32-4437-6	Channel 6
	RF, Mixer Grid & Osc.	32-4437-7	Channel 7
	RF, Mixer Grid & Osc.	32-4437-8	Channel 8
	RF, Mixer Grid & Osc.	32-4437-9	Channel 9
	RF, Mixer Grid & Osc.	32-4437-10	Channel 10
	RF, Mixer Grid & Osc.	32-4437-11	Channel 11
	RF, Mixer Grid & Osc.	32-4437-12	Channel 12
	RF, Mixer Grid & Osc.	32-4437-13	Channel 13



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station preferably a test pattern.
Turn the horizontal hold control to the mid-position of its range.
Turn the horizontal lock-in trimmer (B5) one turn counter-clockwise from the fully clockwise position.
Turn the stabilizing slug (B6) fully counter-clockwise.
Turn the horizontal drive trimmer (B2) fully clockwise and then one turn counter-clockwise.
Adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

Connect an oscilloscope to pin 3 of the horizontal oscillator test jack and chassis.
Adjust B6 until the broad and narrow peaks are of equal amplitude as shown in figure 7.
Turn B2 counter-clockwise until the variation of the brightness control just effects the horizontal linearity of the picture.

Turn the horizontal hold control fully clockwise and adjust B1 until the blanking bar can be seen at the left hand edge of the picture.

Turn the hold control counter-clockwise until the picture comes in, then out of sync. Then turn the hold control slowly clockwise and note the number of horizontal blanking bars just before the picture pulls into sync. If there are more than $3\frac{1}{2}$ bars present turn B5 slightly clockwise, if there is less than $2\frac{1}{2}$ bars present turn B5 slightly counter-clockwise. Repeat steps 3 and 4 until $2\frac{1}{2}$ to $3\frac{1}{2}$ bars are present just before pull-in.

Turn the hold control fully clockwise and adjust B1 until 4 to 6 bars are seen sloping down to the right. Turn the hold control slowly counter-clockwise and observe whether the picture goes in and out of sync. Then turn the hold control slowly clockwise until picture synchronizes. If this sequence is not obtained, repeat steps 3, 4 and 5.

Adjust the width slug (B3) until picture fills the mask horizontally. Adjust the horizontal linearity slug (B4) for best linearity from left to right.

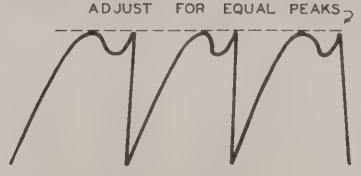


FIG. 7

PHOTOFACT* Folder

*TRADE MARK

RTMA MEMBER RADIO-TELEVISION MANUFACTURERS ASSOCIATION

RCA VICTOR MODELS
TA-128 (CH. KCS42A), TA-129
(CH. KCS41-1)

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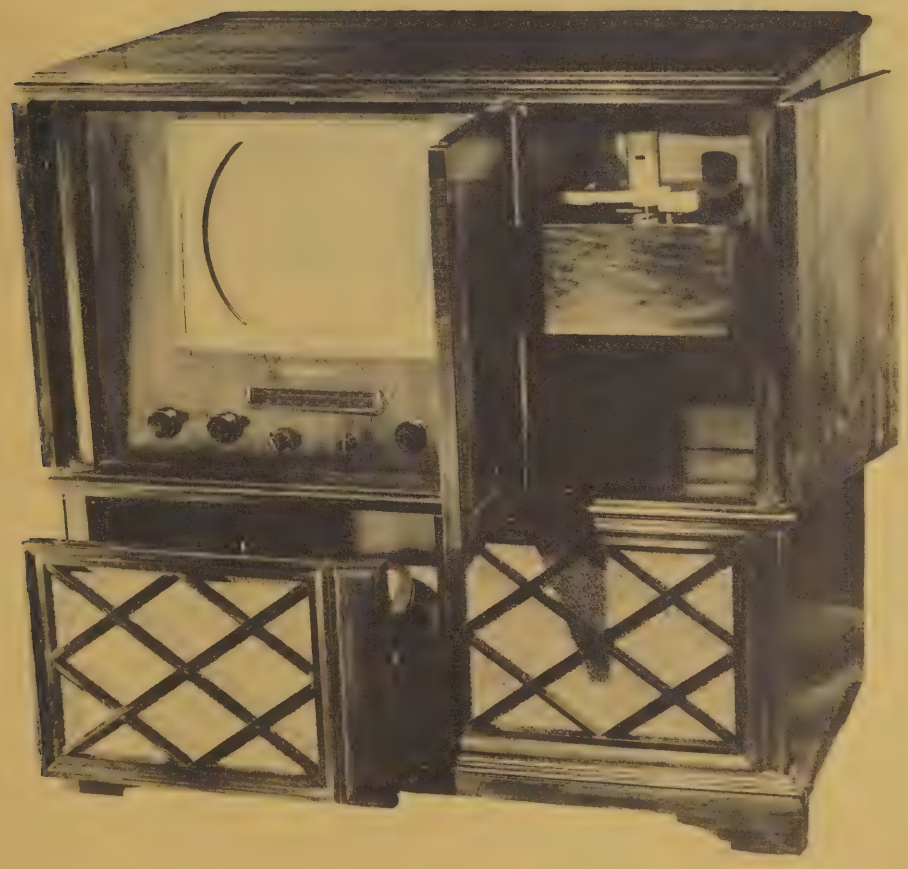
Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



MODEL TA128

RCA VICTOR MODELS
TA-128 (CH. KCS42A), TA-129
(CH. KCS41-1)

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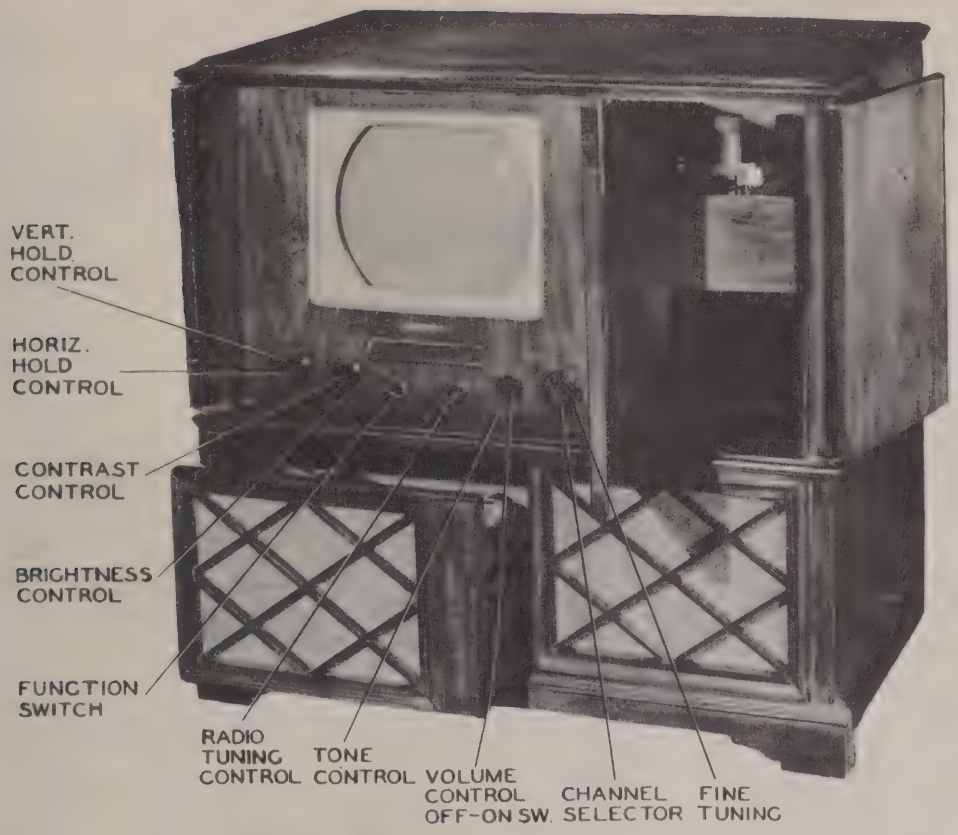
Date 10/50 Set No. 110—Folder No. 11



RCA VICTOR MODEL TA128

TRADE NAME	RCA Victor Models TA128 (Ch. KCS42A), TA129 (Ch. KCS41A-1)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, New Jersey
TYPE SET	TV-Radio-Phono Combination Receiver
TUBES	Thirty
POWER SUPPLY	110-120 Volts AC-60 Cycle
TUNING RANGE—	Channels 2 thru 13
RATINGS	2 Amp. at 117 Volts AC (TV) 1.1 Amp. at 117 Volts AC (Radio)

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FOR SERVICE INFORMATION ON RADIO CHASSIS RK135D-SEE PHOTOFACT SET No. 108-FOLDER No. 10.
FOR SERVICE INFORMATION ON RECORD CHANGER UNITS:
45RPM MODEL-SEE PHOTOFACT SET #72-FOLDER No. 10
33 1/3/78 RPM MODEL-SEE PHOTOFACT SET No. 73-FOLDER No. 7

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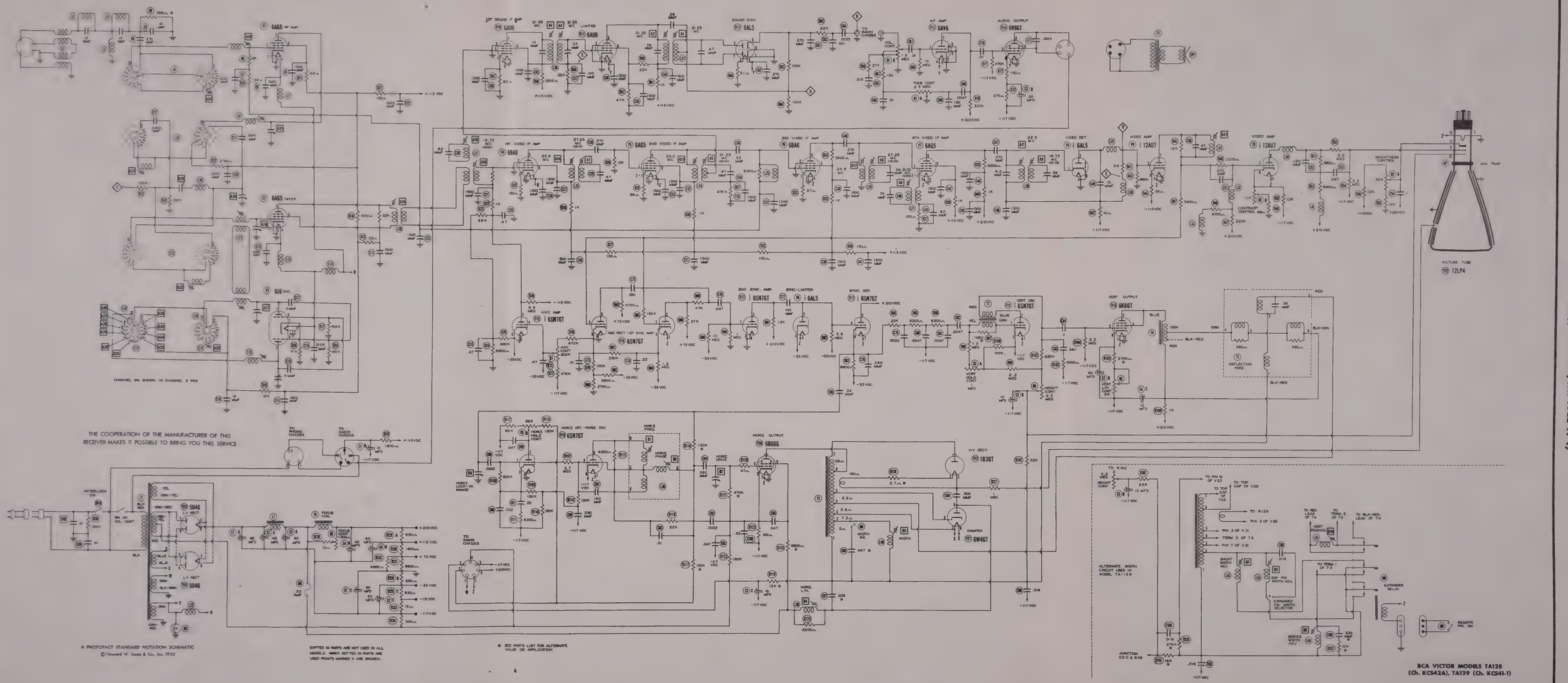
RCA VICTOR MODELS TA128
(Ch. KCS42A), TA129 (Ch. KCS41-1)


RCA VICTOR MODELS TA128
(Ch. KCS42A), TA129 (Ch. KCS41-1)
1ST SOUND IF AMP
6AU6
LIMITER
6AU6
SOUND DISC
6AL5
AF AMP
6AV6
AUDIO OUTPUT
6V6GT
1ST VIDEO IF AMP
6BA6
2ND VIDEO IF AMP
6AG5
3RD VIDEO IF AMP
6BA6
4TH VIDEO IF AMP
6AG5
VIDEO DET
6AL5
VIDEO AMP
12AU7
VIDEO AMP
12AU7
PICTURE TUBE
12LP4
ION TRAP
RF AMP
6AG5
MIXER
6AG5
OSC
6J6
AGC AMP
6SN7GT
AGC RECT-1ST SYNC AMP
6SN7GT
2ND SYNC. AMP.
6SN7GT
SYNC-LIMITER
6AL5
SYNC. SEP.
6SN7GT
VERT OSC
6SN7GT
VERT OUTPUT
6K6GT
HORIZ AFC-HORIZ OSC
6SN7GT
HORIZ OUTPUT
6BG6G
HV RECT
1B3GT
DAMPER
6W4GT
LV RECT
5U4G
LV RECT
5U4G
CHANNEL 3M SHOWN IN CHANNEL 2 POS
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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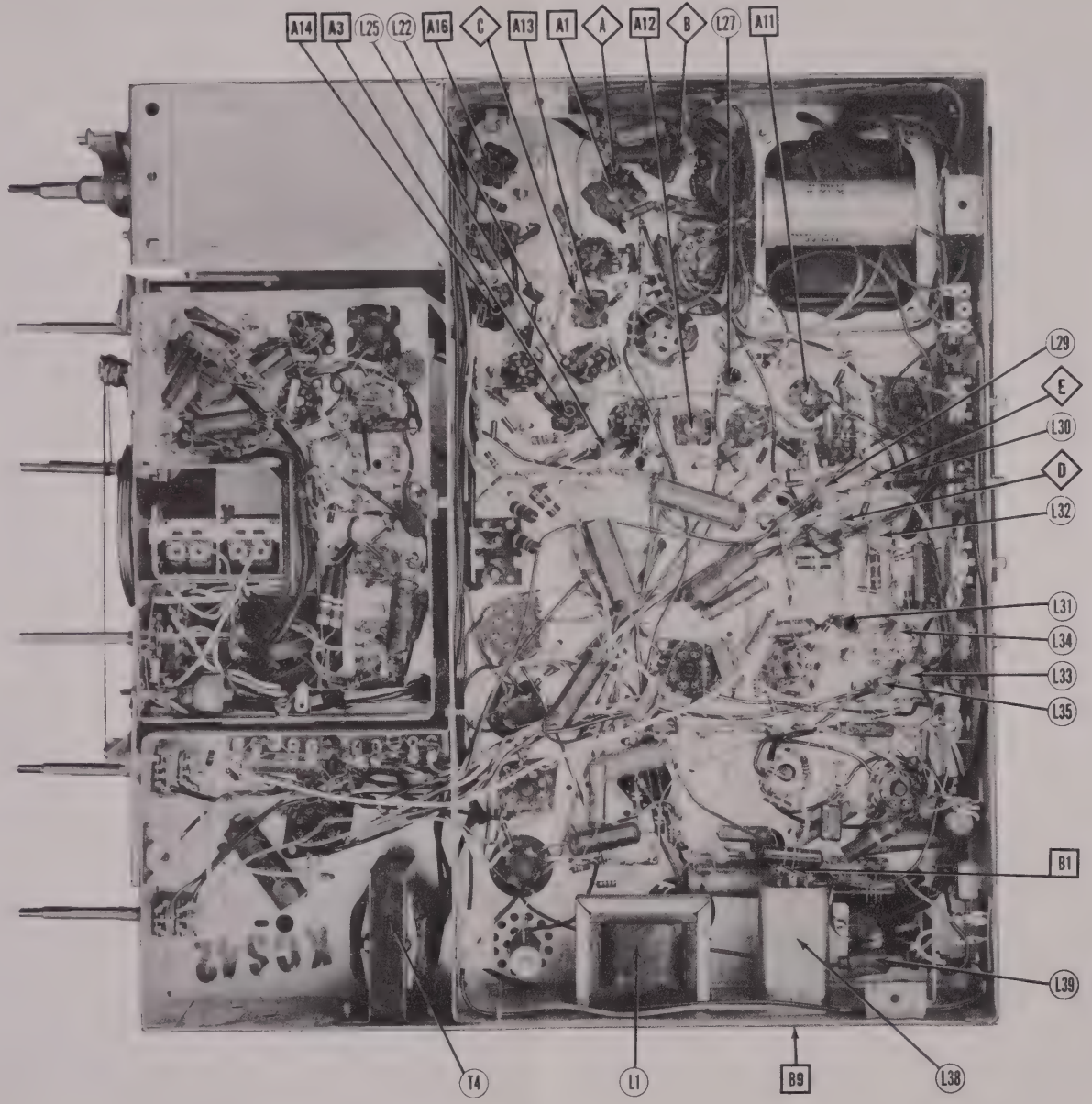
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
ALTERNATE WIDTH CIRCUIT USED IN MODEL TA-129
RCA VICTOR MODELS TA128
(Ch. KCS42A), TA129 (Ch. KCS41-1)

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

RCA VICTOR MODELS TA128
(Ch. KCS42A), TA129 (Ch. KCS41-1)

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate the high voltage shock hazard removed the horizontal output tube V20 from its socket.
Remove the local oscillator tube V3 from its socket to prevent erroneous indications.
Turn the function switch to TV position (fully counter-clockwise).

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (Grid) of 6AU6 (V11). Low side to chassis.	21.25MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1, A2	Detune A1. Adjust A2 for maximum deflection.
2.	.05MFD	"	"	"	DC Probe to Point (B). Common to chassis.	A1	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
3.	.05MFD	High side to pin 1 (Grid) of 6AU6 (V10). Low side to chassis.	"	"	DC Probe thru 100KΩ to Point (C). Common to chassis.	A3, A4	Adjust for maximum deflection.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (Grid) of 6AU6 (V10). Low side to chassis.	21.25MC (450KC Sweep)	21.25MC	Any	Vert. Amp. thru 33KΩ to Point (C). Low side to chassis.	A3, A4	Adjust for maximum amplitude and symmetry as per figure 1.
2.	.05MFD	"	"	"	"	Vert. Amp. to Point (B). Low side to chassis.	A1, A2	Adjust A1 to place 21.25MC at center of diagonal line as per figure 2. Adjust A2 for maximum amplitude and straightness of diagonal line. Continue with step 4.

VIDEO IF ALIGNMENT

Remove the AGC amplifier tube V15 and connect a 250KΩ potentiometer between pins 5 and 6 of V15. Connect the DC probe of a VTVM at the junction of R23 and C25 and the common lead to chassis. Adjust the potentiometer for -12 volts reading.

Turn the channel selector switch to the blank position between channels 2 and 13.

Before attempting step 11 connect a 330Ω carbon resistor across the primary of IF coils L23, L24, L26 and L28. Connect the VTVM as outlined above and adjust the 250KΩ potentiometer for a -2 volts reading.

It should be noted that both leads of the VTVM are at -120 volts potential with respect to chassis. Avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	Not used	21.25MC (Unmod.)	As described above	Use VTVM. DC Probe to Point (D). Common to Point (E).	A5, A6	Adjust for minimum deflection.
5.	Direct	"	"	27.25MC	"	"	A7, A8	"
6.	Direct	"	"	19.75MC	"	"	A9, A10	"
7.	Direct	"	"	22.5MC	"	"	A11	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum -2 volts reading.
8.	Direct	"	"	24.6MC	"	"	A12	"
9.	Direct	"	"	22MC	"	"	A13	"
10.	Direct	"	"	25.9MC	"	"	A14	"
11.	Direct	"	24MC (10MC SWP)	22.05MC 24.75MC	"	Vert. Amp. to pin 1 (Plate) of 12AU7 (V9). Low side to chassis.	A15, A16	Adjust for response curve similar to figure 3 with markers as shown. Remove 330Ω resistors from L23, L24, L26 and L28. Readjust 250KΩ potentiometer to read -12 volt at junction of R23 and C25.
12.	Direct	"	"	22.1MC 25MC 25.75MC 26.5MC	"	"		Check for response curve similar to figure 4. The 25.75MC marker should be at 45% of response. If necessary, SLIGHTLY retouch A-11 thru A16 for proper response.

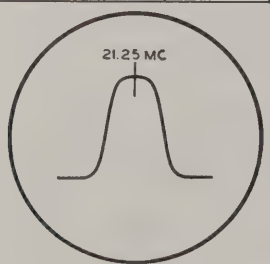


FIG. 1

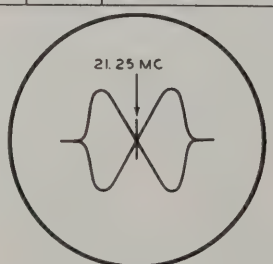


FIG. 2

FIG.3

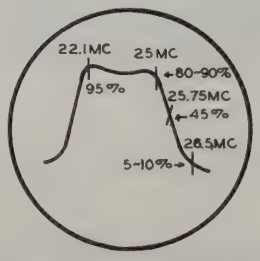


FIG.4

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Connect a VTVM at the junction of R23 and C24 and adjust 250KΩ potentiometer, as used in Video IF Alignment, for -3.5 volts reading.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Replace the local oscillator (V13) in its socket.
Remove the 1st Video IF Tube V4 from its socket after completing step 13.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	Not used	215.75MC (Unmod.)	13	Use VTVM. DC Probe to Point (B). Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
14.	"	"	177MC (10MC SWP)	175.25MC 179.75MC	7	Vert. Amp. to Point (F). Low side to chassis.	A18, A19, A20, A21	Adjust for flat topped response curve similar to figure 5 with markers above 70%.
15.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"	A18	Adjust for maximum amplitude and minimum slope of top part of response curve.
16.	"	"	177MC (10MC SWP)	175.25MC 179.75MC	7	"		Check for response curve similar to figure 5. If markers are below 70% on any channel make a slight readjustment of A18, A19, A20 and A21 with channel selector on that channel. Recheck other high band channels for optimum response.
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			207MC (10MC SWP)	205.25MC 209.75MC	12			
			213MC (10MC SWP)	211.25MC 215.75MC	13			
17.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A22, A23, A24, A25	Adjust for flat topped response cuve similar to figure 5 with markers above 70%.
18.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check for response curve similar to figure 5 If markers fall below 70% on any channel make a slight readjustment of A22, A23, A24 and A25 with channel selector on that channel. Recheck other low band channels for optimum results.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT

Disconnect the 250KΩ potentiometer and replace the AGC amplifier tube (V15) and the 1st Video IF tube V4.
The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
19.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	215.75MC (Unmod.)	13	DC Probe to Point (B). Low side to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A26	
			203.75MC	11		A27	
			197.75MC	10		A28	
			191.75MC	9		A29	
			185.75MC	8		A30	
			179.75MC	7		A31	
			87.75MC	6		A32	
			81.75MC	5		A33	
			71.75MC	4		A34	
			65.75MC	3		A35	
			59.75MC	2		A36	

4.5MC TRAP ADJUSTMENT

Connect a jumper across the terminals of sound take-off trap (L24). Tune in a strong station signal and if a 4.5MC beat is seen in the picture, adjust trap coil A37 until beat disappears.

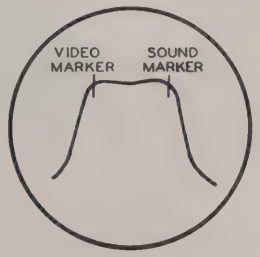


FIG.5

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.3VDC	0V.	0V.	6.3VAC	125VDC	120VDC	0V.		
V 2	6AG5	-1.4VDC	0V.	0V.	6.3VAC	105VDC	105VDC	0V.		
V 3	6J6	50VDC	50VDC	6.3VAC	0V.	§-4.3VDC	§-3.2VDC	.2VDC		
V 4	6BA6	.2VDC	0V.	0V.	6.3VAC	95VDC	95VDC	1.8VDC		
V 5	6AG5	-.1VDC	.6VDC	6.3VAC	0V.	100VDC	100VDC	.6VDC		
V 6	6BA6	-.4VDC	0V.	0V.	6.3VAC	60VDC	100VDC	.6VDC		
V 7	6AG5	0V.	.9VDC	6.3VAC	0V.	170VDC	115VDC	.9VDC		
V 8	6AL5	-120VDC	-60VDC	0V.	6.3VAC	-60VDC	0V.	-145VDC		
V 9	12AU7	-33VDC	-120VDC	-120VDC	6.3VAC	6.3VAC	120VDC	-20VDC	-17VDC	0V.
V 10	6AU6	0V.	0V.	0V.	6.3VAC	110VDC	110VDC	.6VDC		
V 11	6AU6	-.5VDC	0V.	0V.	6.3VAC	115VDC	55VDC	0V.		
V 12	6AL5	0V.	-.3VDC	1.2VAC	6.3VAC	0V.	0V.	-.3VDC		
V 13	6AV6	-.7VDC	0V.	0V.	6.3VAC	0V.	0V.	75VDC		
V 14	6V6GT	0V.	0V.	55VDC	70VDC	-105VDC	0V.	6.3VAC	-110VDC	
V 15	6SN7GT	-125VDC	230VDC -15VDC	-120VDC	-60VDC -75VDC	.3VDC	-60VDC	6.3VAC	0V.	
V 16	6SN7GT	-28VDC	75VDC	-25VDC	-32VDC	75VDC	-25VDC	6.3VAC	0V.	
V 17	6SN7GT	-1.2VDC	150VDC	0V.	-60VDC	210VDC	-55VDC	6.3VAC	0V.	
V 18	6K6GT	0V.	0V.	200VDC	200VDC	-85VDC	-115VDC	6.3VAC	-75VDC -85VDC	
V 19	6SN7GT	-95VDC	-17VDC	-100VDC	-175VDC	50VDC	-117VDC	6.3VAC	0V.	
V 20	6BG6G	0V.	0V.	-105VDC	-115VDC	-120VDC	-105VDC	6.3VAC	140VDC	TOP CAP *
V 21	6W4GT	0V.	0V.	320VDC	0V.	205VDC	0V.	¶	¶	
V 22	1B3GT	* DO NOT MEASURE.								
V 23	5U4G	0V.	225VDC	0V.	215VAC	0V.	215VAC	0V.	225VDC	
V 24	12LP4	0V.	.6VDC	PIN 10 300VDC	PIN 11 100VDC	PIN 12 6.3VAC				

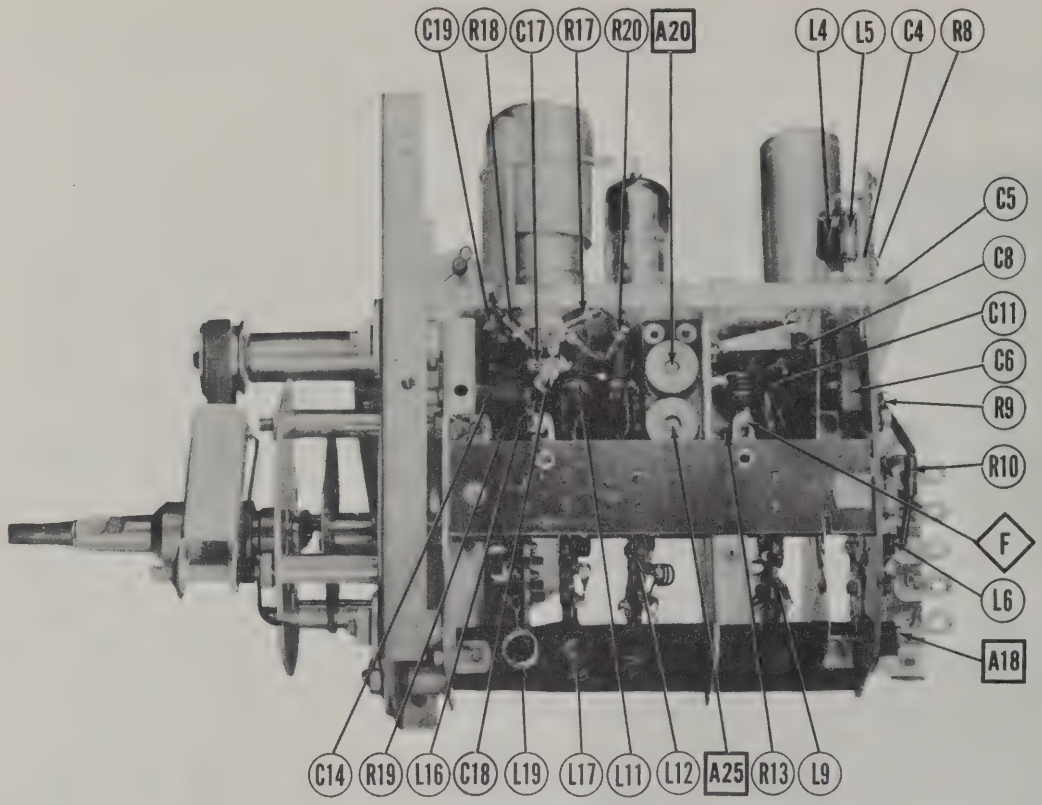
§ TAKEN WITH VACUUM TUBE VOLTMETER.
¶ 6.3VAC MEASURED ACROSS FILAMENTS.
* DO NOT MEASURE.

RESISTANCE READINGS

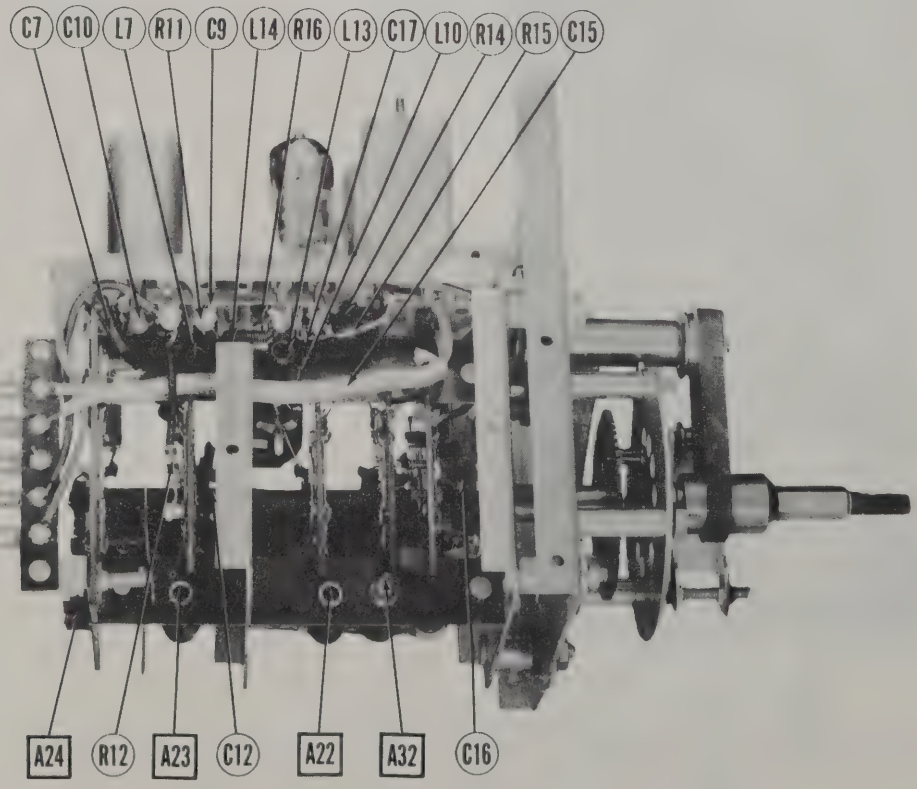
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	17KΩ	0Ω	0Ω	.1Ω	†3.7KΩ	†1.2KΩ	0Ω		
V 2	6AG5	100KΩ	0Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	0Ω		
V 3	6J6	†12KΩ	†12KΩ	.1Ω	0Ω	100KΩ	100KΩ	47Ω		
V 4	6BA6	48KΩ	0Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	150Ω		
V 5	6AG5	10KΩ	68Ω	.1Ω	0Ω	†2.1KΩ	†2.1KΩ	68Ω		
V 6	6BA6	6.8KΩ	0Ω	0Ω	.1Ω	†5.9KΩ	†2KΩ	47Ω		
V 7	6AG5	.1Ω	150Ω	.1Ω	0Ω	†9.2KΩ	†1.9KΩ	150Ω		
V 8	6AL5	1.3KΩ	3.9 Meg.	0Ω	.1Ω	650Ω	0Ω	6.9KΩ		
V 9	12AU7	7KΩ	6.9KΩ	1.3KΩ	.1Ω	.1Ω	†12KΩ	4.7KΩ	5.8KΩ	0Ω
V 10	6AU6	470KΩ	0Ω	0Ω	.1Ω	†2.1KΩ	†2.1KΩ	82Ω		
V 11	6AU6	22KΩ	0Ω	0Ω	.1Ω	†1.9KΩ	†18KΩ	0Ω		
V 12	6AL5	0Ω	100KΩ	2.1Ω	.1Ω	200KΩ	0Ω	100KΩ		
V 13	6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	0Ω	†330KΩ		
V 14	6V6GT	Inf.	0Ω	†4KΩ	†3KΩ	470KΩ	25Ω	.1Ω	1.8KΩ	
V 15	6SN7GT	2.6 Meg.	#240KΩ #1.6 Meg.#	1.3KΩ	300KΩ 320KΩ	47KΩ	650Ω	.1Ω	0Ω	
V 16	6SN7GT	165KΩ	†30KΩ	320KΩ	13KΩ	†7.4KΩ	100KΩ	.1Ω	0Ω	
V 17	6SN7GT	1 Meg.	†15KΩ	0Ω	3.9 Meg.	†60Ω	7.4KΩ	.1 Ω	0Ω	
V 18	6K6GT	Inf.	0Ω	†1.5KΩ	†1.5KΩ	2.2 Meg.	3.5KΩ	.1Ω	9000Ω 4000Ω	
V 19	6SN7GT	1 Meg.	#185KΩ	330KΩ	300KΩ	#130KΩ	1.3KΩ	.1Ω	0Ω	
V 20	6BG6G	Inf.	0Ω	1.4KΩ	1.3KΩ	650KΩ	1.4KΩ	.1Ω	†6.8KΩ	TOP CAP #115Ω
V 21	6W4GT	Inf.	Inf.	250KΩ	Inf.	†95Ω	Inf.	250KΩ	250KΩ	
V 22	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #465Ω
V 23	5U4G	Inf.	5.5KΩ	Inf.	1.3KΩ	Inf.	1.3KΩ	Inf.	5.5KΩ	
V 24	12LP4	0Ω	1.1 Meg.	PIN 10 #22KΩ	PIN 11 14KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 8 OF V23.
# MEASURED FROM PIN 3 OF V21.

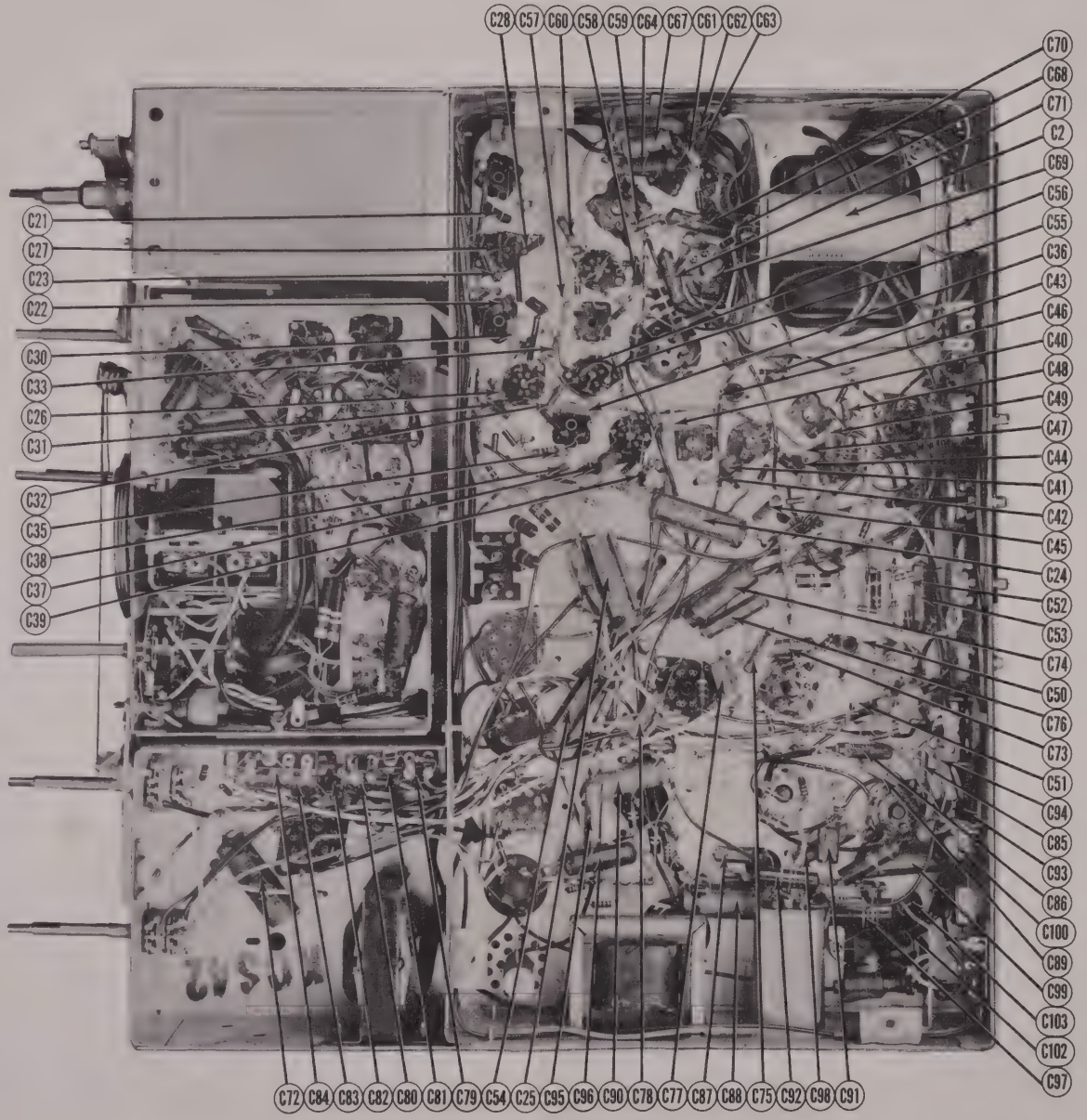
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



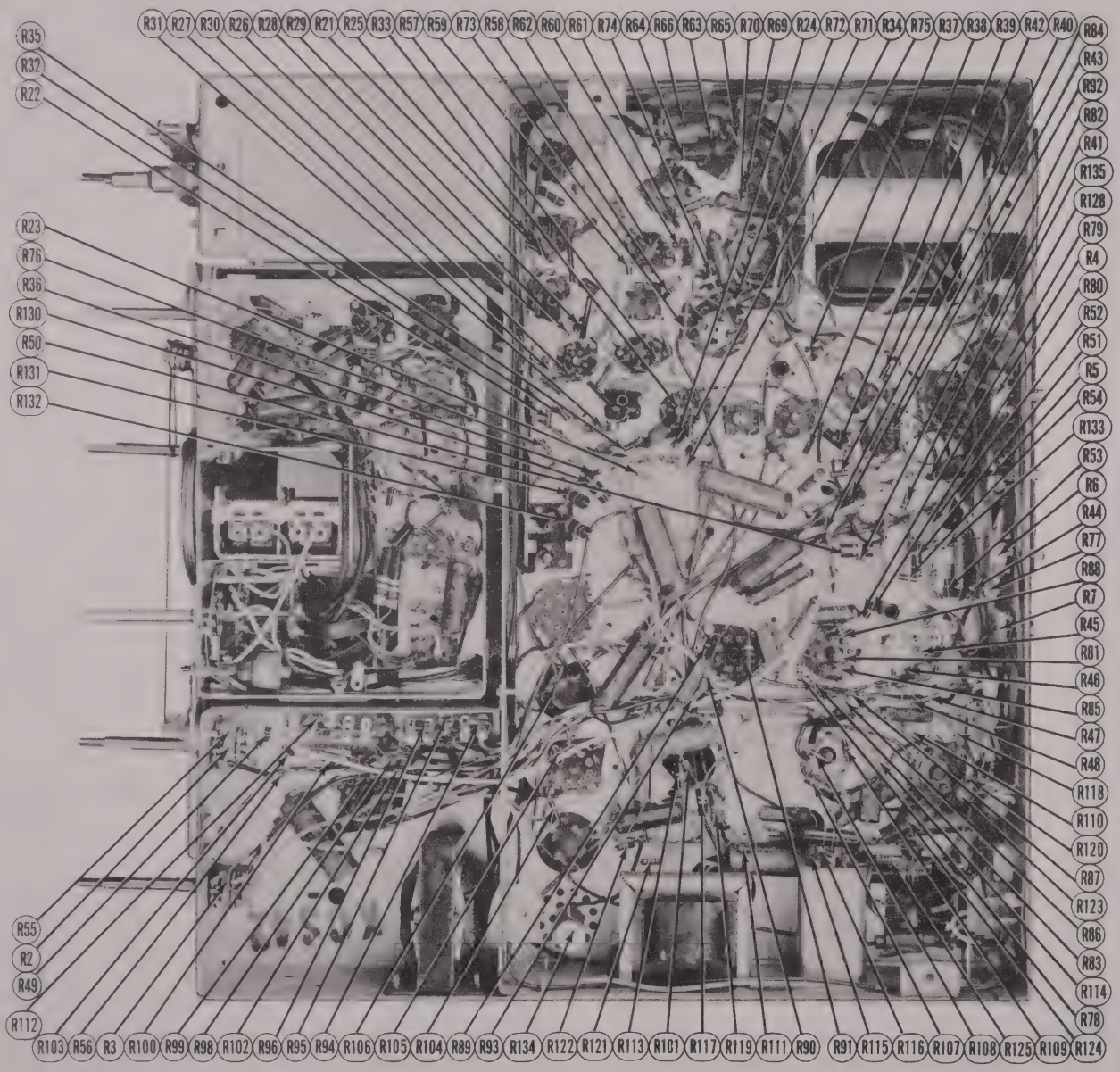
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		RCA PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF	6BA6	6BA6	7BT	
V5	2nd Video IF	6AG5	6AG5	7BD	
V6	3rd Video IF	6BA6	6BA6	7BT	
V7	4th Video IF	6AG5	6AG5	7BD	
V8	Video Det. -Sync. Limiter	6AL5	6AL5	6BT	
V9	Video Amp.	12AU7	12AU7	9A	
V10	1st Sound IF	6AU6	6AU6	7BK	
V11	Limiter	6AU6	6AU6	7BK	
V12	Sound Discr.	6AL5	6AL5	6BT	
V13	AF Amp.	6AV6	6AV6	7BT	
V14	Audio Output	6V6GT	6V6GT	7AC	
V15	AGC Amp. Vert. Osc.	6SN7GT	6SN7GT	8BD	
V16	AGC Rect. -1st Sync. Amp.	6SN7GT	6SN7GT	8BD	
V17	2nd Sync. Amp. - Sync. Sep.	6SN7GT	6SN7GT	8BD	
V18	Vert. Output	6K6GT	6K6GT	7S	
V19	Hor. AFC-Hor. Osc.	6SN7GT	6SN7GT	8BD	
V20	Hor. Output	6BG6G	6BG6G	5BT	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rect.	1B3GT	1B3GT	3C	
V23	LV Rect.	5U4G	5U4G	5T	
V24	LV Rect.	5U4G	5U4G	5T	Used in model TA-129 only.
V25	Picture Tube	12LP4	12LP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	450	73582	AFH82J16E		UPT4145-820		TVL-3761	● Filter
B	10	450							■ Decoupling
C	80	200							▲ Filter
C2A	40	450	73583	AFH8J1810D		UPT445-9515		TVL-3708	● Filter
B	90	150							■ Vert. Output Cath.
C	50	150							▲ Filter
C3A	60	450	73581	AFH1222J4D		UPT6l145-215		TVL-4753	● Filter
B	10	450							■ Decoupling
C	10	450							▲ Decoupling
D	20	150							Output Cath. Bypass
C4A	40	450	71432	AFH882J		UPT44145		TVL-3785	● Filter
B	40	450							■ Filter
C	10	450							▲ Vert. Output Dec.
C5	18		54207		TCZ-18		NPOK-18		Fixed Trimmer
C6	270	1000	73091	SI270	D6-271		GP2K-270	19C31	RF Coupling
C7	1500		71501	SI1500	D6-152		GP2L-0015	29C8	AGC Filter
C8	1500		71501	SI1500	D6-152		GP2L-0015	29C8	RF Screen Bypass
C9	1500		71501	SI1500	D6-152		GP2L-0015	29C8	RF Fil. Bypass
C10	1500		71501	SI1500	D6-152		GP2L-0015	29C8	RF Bypass
C11	1500		71501	SI1500	D6-152		GP2L-0015	29C8	RF Coupling
C12	5000		73473	BPD-005	DD-502		811-005	29C1	RF Coupling
C13	1500		71501	SI1500	D6-152		GP2L-0015	29C8	Mixer Decoup.
C14	1500		71501	SI1500	D6-152		GP2L-0015	29C8	Decoupling
C15	1500		71501	SI1500	D6-152		GP2L-0015	29C8	Mixer Fil. Bypass
C16	10		53511	SI10NPO	TCZ-10		NPOK-10	19C3	Osc. Decoupling
C17	5		74035	SI5NPO	TCZ-4.7		NPOK-5		Osc. Feedback
C18	5		74035	SI5NPO	TCZ-4.7		NPOK-5		Osc. Feedback
C19	1500		71501	SI1500	D6-152		GP2L-0015	29C8	Osc. Fil. Bypass
C20	82				TCZ-82		NPOM-82		Fixed Trimmer
C21	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C22	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C23	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C24	.47	200	73787	P288-47		GT2P5		TM-5-2	AGC Filter
C25	.47	200	73787	P288-47		GT2P5		TM-5-2	AGC Filter
C26	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C27	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st V. IF Dec.
C28	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st V. IF Fil.
C29	47				TCZ-47		NPOM-47	29C14	Fixed Trimmer
C30	270	1000	73091	1468-00025	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C31	1500		71501	SI1500	D6-152	1W5D15	GP2K-0015	29C8	RF Bypass
C32	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd V. IF Decoup.
C33	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd V. IF Fil.
C34	4.7				TCZ-47		NPOM-47	29C14	Fixed Trimmer
C35	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st Sound IF Grid Filter
C36	33		74105	SI33NPO	TCZ-33	5R5Q3	NPOL-33	29C13	IF Coupling
C37	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C38	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C39	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	3rd V. IF Dec.
C40	270	1000	73091	1468-00025	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C41	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C42	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Screen
C43	82		64062	SI82	TCZ-82	5W5T1	GP1K-82	19C11	4th V. IF Cath.
C44	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Plate Dec.
C45	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C46	75			SI75NPO	TCZ-75		NPOM-75		Fixed Trimmer
C47	270	1000	73091	1468-00025	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C48	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C49	10	500	72615	1468-00001	D6-100	5W5Q1	GP1K-10	MS-41	V. Diode Filter
C50	47				TCZ-47		NPOM-47	29C14	Fixed Trimmer
C51	270		73922	SI270	D6-271	5W5T25	GP2K-270	19C31	Video Coupling
C52	120		73921	SI120	D6-121	5W5T15	GP2K-120	19C29	Video Coupling
C53	.047	400	73553	P488-047	DF-503	PTE4S5		TM-15-4	Video Coupling
C54	.1	600	73557	P688-1	DF-104	PTE6P1		TM-1	Pic. Tube Cath.
C55	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st S. IF Dec.
C56	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st S. IF Cath.

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C57	100		39396	SI100	D6-101	5W5T1	GP1K-100	19C11	Limiter Grid Filter
C58	1500		71501	SI1500	D6-153	1W5D15	GP2L-0015	29C8	Limiter Screen
C59	1500		71501	SI1500	D6-153	1W5D15	GP2L-0015	29C8	Limiter Plate Dec.
C60	1500		71501	SI1500	D6-153	1W5D15	GP2L-0015	29C8	Limiter Fil.
C61	270		73922	SI270	D6-271	5W5T25	GP2K-270	19C31	RF Bypass
C62	270		73922	SI270	D6-271	5W5T25	GP2K-270	19C31	Discr. Fil. Bypass
C63	.001	600	73801	P688-001	D6-102	PTE6D1	GP2L-001	TM-21	De-emphasis
C64	.0033	400	73795	P688-0033	D6-332	PTE6D3	GP2M-0033	TM-23	Audio Coupling
C65	.015	200	73797	P288-015		PTE6S15			Tone Compensation
C66	.01	400	73561	P488-01	D6-103	PTE4S1	811-01	TM-11-4	Tone Compensation
C67	.01	400	73561	P488-01	D6-103	PTE4S1	811-01	TM-11-4	Audio Coupling
C68	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2M-0047	TM-25	Tone Compensation
C69	120	500	39630	SI120	D6-121	5W5T15	GP2K-120	19C29	Tone Compensation
C70	.01	1000	73565	P1088-01	D6-103	PTE16S1	811-01	MB-11	Audio Coupling
C71	.0015	600	73803	P688-0015	D6-152	PTE6D1	GP2L-0015	TM-21	Output Plate Bypass
C72	.47	200	73787	P288-47		GT2P5		TM-5-2	AGC Filter
C73	.01	400	73561	P488-01	D6-103	PTE4S1	811-01	TM-11-4	AGC Rect. Cath.
C74	.22	200	73784	P488-22		GT2P25		TM-2-2	1st Sync. Amp. Cath.
C75	.001	600	73801	P688-001	D6-102	PTE6D1	GP2L-001	TM-21	Sync. Coupling
C76	.047	400	73553	P488-047		PTE4S5		TM-15-4	Sync. Coupling
C77	100	600	75060	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Sync. Coupling
C78	390	500	68542	1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	Sync. Sep. Cath.
C79	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2M-0022	TM-22	Integrator Net.
C80	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2M-0047	TM-25	Integrator Net.
C81	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2M-0047	TM-25	Integrator Net.
C82	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2M-0047	TM-25	Vert. Osc. Grid
C83	.047	600	73592	P688-047		PTE6S5		TM-15	Vert. Discharge
C84	.1	400	73551	P488-1		PTE4P1		TM-1	Vert. Sweep Coupling
C85	39	1000	74736	1469-00004	TCZ-39	5R5S4	GP1K-39	MS-44	Hor. Sync. Coupling
C86	.0022	600	73803	P688-0022	D6-222	PTE6D2	GP2M-0022	TM-22	Hor. Sync. Coupling
C87	.22	400	73794	P488-22		GT4P25		TM-2-4	AFC Filter
C88	.022	400	73562	P488-022		PTE4S2		TM-12-4	AFC Filter
C89	390	500	68542	1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	AFC Filter
C90	.047	600	73592	P688-047		PTE6S5		TM-15	Hor. AFC Plate
C91	100	1000	73102						Hor. Osc. Grid Cap.
C92	.01	600	73594	P688-01		PTE6S1		TM-11	Fixed Trimmer
C93	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2M-0022	TM-22	Hor. Discharge
C94	560	500	74250	1468-0005	D6-561	5W5T5	GP2K-560	1FM-35	Hor. Sweep Coup.
C95	.047	400	73553	P488-047		PTE4S5		TM-15-4	Bias Filter
C96	.018	1000	74737	P1088-015		PTE16S15		MB-115	Damper Filter
C97	.039	1000	74738	P1084-04		PTE16S4		TR-14	Damper Filter *
C98	.047	400	73553	P488-047		PTE4S5		TM-15-4	Fixed Trimmer †
C99	.047	1000	73597	P1088-047		GT16S5		TR-15	Hor. Output Screen
C100	.22	400	73794	P488-22		GT4P25		TM-2-4	Hor. Output Cath.
C101	500	20K	74153	HV20A	TV1-502				HV Filter
C102	.01	600	73565	P688-01	D6-103	PTE6S1	811-01	TM-11	Line Filter
C103	.01	600	73565	P688-01	D6-103	PTE6S1	811-01	TM-11	Line Filter
C104	.01	400		P488-01	D6-103	PTE4S1	811-01	TM-11-4	Decoupling †
C105	330	500		1469-00035	D6-331	5R5T3	GP2K-330	MS-33	Fixed Trimmer †

* Model TA129 uses .068MFD in this application, Mfgr's Part No. 73815.
† Model TA129 uses .01MFD in this application, Mfgr's Part No. 39640.
‡ Used only in model TA139.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2.5 Meg.	½	74359		RTV-37	SBBT-615-S	Tone control-front
B	1.5 Meg.	½					Volume control and switch, tapped at 500KΩ and 25KΩ-rear
R2A	50KΩ	½	74047	Concentrikit Bll-123 * Bl7-116 * E-187 *	RTV-12	SBB-506	Brightness control-front
B	10KΩ	½					Contrast control-rear
C	Shaft End						Attach per instructions in "Concentrikit".
R3A	1 Meg.	½	72734	Concentrikit Bll-137 * Bll-123 * E-187 *	RTV-8	SBB-515	Vert. hold control-front
B	50KΩ	½					Horiz. hold control-rear
C	Shaft End						Attach per instructions in "Concentrikit".
R4A	2.5 Meg.	½	71440	Qll-239	AM-84-S	AN-83	Height control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5	1300Ω	2	74597		RTV-14	VK-129	Focus control-Wire Wound
R6A	5000Ω	½	71441	Qll-114	AM-19-S	AN-10	Vert. linearity control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7A	200KΩ	½	74475		AG-52-S	B-46	AGC control
B	Shaft		Not Req.		FKS-1/4	Not Req.	Attach to R7A per instructions

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	RCA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R8	390Ω	½		BTS-390	Antenna Loading-See Note 1
R9	10KΩ 20%	½			RF Amp. Grid
R10	150Ω 20%	½		BTS-150	AGC Network
R11	150Ω 20%	½		BTS-150	RF Amp. Screen
R12	2700Ω	½		BTS-2700	RF Amp. Plate
R13	100KΩ 20%	½		BTS-100K	Series Test Point
R14	100KΩ 20%	½			Mixer Grid
R15	150Ω 20%	½		BTS-150	Mixer Decoupling
R16	1000Ω 20%	½		BTS-1000	Decoupling
R17	100KΩ 20%	½			Osc. Grid
R18	100KΩ 20%	½			Osc. Grid
R19	10KΩ 20%	½			Osc. Plate
R20	47Ω 20%	½			Osc. Cathode
R21	150Ω 20%	½		BTS-150	Decoupling
R22	1000Ω 20%	½		BTS-1000	AGC Network
R23	39KΩ 5%	½			AGC Network
R24	6800Ω 5%	½			AGC Network
R25	150Ω 5%	½		BTS-150-5%	1st Video IF Amp. Cathode

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R26	1000Ω 20%	½		BTS-1000	1st Video IF Amp. Decoupling
R27	150Ω 20%	½		BTS-150	Decoupling
R28	10KΩ 5%	½			2nd Video IF Amp. Grid
R29	68Ω	1			2nd Video IF Amp. Cathode
R30	1000Ω 20%	½		BTS-1000	2nd Video IF Amp. Decoupling
R31	47KΩ	½			1st Sound IF Amp. Grid
R32	150Ω 20%	½		BTS-150	Decoupling
R33	47Ω 5%	½			3rd Video IF Amp. Cathode
R34	3900Ω 5%	½		BTS-3900-5%	3rd Video IF Amp. Plate
R35	1000Ω 20%	½		BTS-1000	3rd Video IF Amp. Decoupling
R36	150Ω 20%	½		BTS-150	Decoupling
R37	150Ω	½		BTS-150	4th Video IF Amp. Cathode
R38	1000Ω 20%	½		BTS-1000	4th Video IF Amp. Screen
R39	8200Ω 5%	1			4th Video IF Amp. Plate
R40	1000Ω 20%	½		BTS-1000	4th Video IF Amp. Decoupling
R41	5600Ω 5%	½		BTS-5600-5%	Video Det. Diode Load
R42	10Ω 20%	½		BW-½-10	Bias Network
R43	680KΩ	½		BTS-680K	Video Amp. Grid
R44	39Ω	½		BW-½-39	Video Amp. Cathode
R45	12KΩ	½		BTS-12K	Trap Coil Shunt
R46	2200Ω	½		BTS-2200	Video Amp. Plate
R47	220KΩ	½		BTS-220K	Video Amp. Plate
R48	47000Ω 5%	½		BTS-4700-5%	Video Peaking
R49	68Ω 20%	½		BW-½-68	Video Amp. Cathode
R50	12KΩ	2		BTB-12K	Voltage Divider
R51	5600Ω	1		BTA-5600	Video Amp. Plate
R52	8800Ω 5%	1		BTA-8800-5%	Video Amp. Plate
R53	2.2 Meg.	½		BTS-2.2 Meg.	Voltage Divider
R54	2.2 Meg.	½		BTS-2.2 Meg.	Picture Tube Grid
R55	12KΩ	½		BTS-12K	Voltage Divider
R56	12KΩ	½		BTS-12K	Voltage Divider
R57	82Ω	½		BTS-82	1st Sound IF Amp. Cathode
R58	1200Ω	½		BTS-1200	1st Sound IF Amp. Decoupling
R59	22KΩ	½			2nd Sound IF Amp. Grid
R60	22KΩ 20%	½			2nd Sound IF Amp. Screen
R61	1000Ω 20%	½		BTS-1000	2nd Sound IF Amp. Plate Decoupling
R62	47KΩ 20%	½			Voltage Divider
R63	100KΩ 5%	½		BTS-100K-5%	Disc. Diode Load
R64	100KΩ 5%	½		BTS-100K-5%	Disc. Diode Load
R65	22KΩ 20%	½		BTS-22K	De-emphasis
R66	5.1Ω	½	72087	BW-½-4.7	Disc. Filament-Wire Wound
R67	15KΩ	½		BTS-15K	Tone Compensation
R68	27KΩ	½		BTS-27K	Tone Compensation
R69	10 Meg. 20%	½		BTS-10 Meg.	AF Amp. Grid
R70	330Ω	½		BTS-330	AF Amp. Plate
R71	470KΩ 20%	½		BTS-470	Audio Output Grid
R72	150Ω	1		BTA-150	Audio Output Cathode
R73	270Ω	1		BTA-270	Audio Output Cathode
R74	1800Ω	2		BTB-1800	Audio Output Decoupling
R75	680KΩ	½		BTS-680K	AGC Network
R76	6.8 Meg.	½		BTS-6.8 Meg.	Voltage Divider
R77	470KΩ	½		BTS-470K	Voltage Divider
R78	470KΩ	½		BTS-470K	Voltage Divider
R79	100KΩ 5%	½		BTS-100K-5%	AGC Rect. Cathode
R80	2700Ω	½		BTS-2700	AGC Rect. Cathode
R81	330KΩ	½		BTS-330K	Voltage Divider
R82	5600Ω	½		BTS-5600	Voltage Divider
R83	4700Ω	½		BTS-4700	AGC Rect. Plate
R84	1.2 Meg. 5%	½		BTS-1.2 Meg. 5%	Bias Network
R85	150KΩ 20%	½		BTS-150K	1st Sync. Amp. Grid
R86	27KΩ	½		BTS-27K	1st Sync. Amp. Plate
R87	5600Ω	½		BTS-5600	Isolation
R88	47KΩ	½		BTS-47K	Phase Shifting
R89	1 Meg.	½		BTS-1 Meg.	2nd Sync. Amp. Grid
R90	10 Meg.	½		BTS-10 Meg.	Voltage Divider
R91	15KΩ	1		BTA-15K	2nd Sync. Amp. Plate
R92	3.9 Meg.	½		BTS-3.9 Meg.	Sync. Sep. Grid
R93	6800Ω	½		BTS-6800	Sync. Sep. Cathode
R94	22KΩ	½		BTS-22K	Integrator
R95	8200Ω	½		BTS-8200	Integrator
R96	8200Ω	½		BTS-8200	Integrator
R97	1 Meg.	½		BTS-1 Meg.	Vert. Osc. Transformer Shunt-See Note 1
R98	1.5 Meg. 5%	½		BTS-1.5 Meg. 5%	Vert. Osc. Grid
R99	2.2 Meg.	½		BTS-2.2 Meg.	Voltage Divider
R100	100KΩ	½		BTS-100K	Voltage Divider
R101	22KΩ	½		BTS-22K	Decoupling
R102	220KΩ	½		BTS-220K	Vert. Osc. Plate
R103	8200Ω 5%	½		BTS-8200-5%	Vert. Peaking
R104	2.2 Meg.	½		BTS-2.2 Meg.	Vert. Output Grid
R105	2700Ω	½		BTS-2700	Vert. Output Cathode-See Note 2
R106	1000Ω	½		BTS-1000	Vert. Output Decoupling
R107	2.7 Meg. 5%	1		BTA-2.7 Meg. 5%	Voltage Divider
R108	820KΩ 5%	½		BTS-820K-5%	Horiz. AFC Grid
R109	150KΩ	½		BTS-150K	Horiz. AFC Cathode
R110	180KΩ 5%	1		BTA-180K-5%	Horiz. AFC Cathode
R111	8200Ω	½		BTS-8200	Horiz. AFC Filter Network
R112	68KΩ	½		BTS-68K	Voltage Divider
R113	120KΩ	1		BTA-120K	Voltage Divider
R114	120KΩ 5%	1		BTA-120K-5%	Horiz. Osc. Grid
R115	8200Ω 20%	½		BTS-8200	Horiz. Osc. Transformer Shunt
R116	22KΩ	½		BTS-22K	Horiz. Osc. Transformer Shunt
R117	100KΩ	1		BTA-100K	Horiz. Osc. Plate-See Note 3
R118	150KΩ	½		BTS-150K	Horiz. Feedback-See Note 4
R119	15KΩ	½		BTS-15K	Filter-See Note 5
R120	47Ω 20%	½			Parasitic Suppressor
R121	470KΩ	½		BTS-470K	Horiz. Output Grid-See Note 6
R122	180KΩ	½		BTS-180K	Bias Network
R123	100Ω	2		BW-2-100	Horiz. Output Cathode
R124	6800Ω	2		BTB-6800	Horiz. Output Screen-See Note 7
R125	2200Ω	1		BTA-2200	Horiz. Linearity Control Shunt
R126	2.7Ω 5%	½	74598		HV Rect. Filament-Wire Wound-See Note 8
R127	1 Meg. 20%	1			HV Filter
R128	10Ω	½	18471	BW-½-10	Focus Coil Shunt-Wire Wound

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R129A	850Ω	12	73688		Voltage Divider-Wire Wound
B	650Ω	6			Bias Network-Wire Wound
C	650Ω	6			Bias Network-Wire Wound
R130	1800Ω	2		BTB-1800	Voltage Divider
R131	6800Ω	2		BTB-6800	Bleeder
R132	6800Ω	2		BTB-6800	Bleeder
R133	18Ω	½		BW-½-18	Bias Network
R134	500Ω	20	74049	2D-500	Bias Network-Wire Wound
R135	100KΩ 20%	2		BTB-100K	Line Filter
R136	270KΩ	½		BTS-270K	Filter-See Note 9
R137	10KΩ	½		BTS-10K	Horiz. Peaking-See Note 1

Note 1. Not used in all models.
Note 2. Model TA-129 uses a 2200Ω resistor in this application.
Note 3. Model TA-129 uses a 82KΩ resistor in this application.
Note 4. Some models use a 470KΩ resistor in this application.
Note 5. Model TA-129 uses a 18KΩ resistor in this application.
Note 6. Model TA-129 uses 220KΩ resistor in this application.
Note 7. Model TA-129 uses 8200Ω resistor in this application.
Note 8. Model TA-129 uses 4.7Ω resistor in this application.
Note 9. Used in model TA-129 only.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1A	117VAC	680VCT	5VAC	6.3VAC	74981 ①		P-3063	
	⑥ 2A	.350ADC	⑥ 3A	⑥ 1.2A			P-2945 ⑥	
				SEC. 4				
				6.3VAC				
				⑥ 1.8A				
				SEC. 5				
				6.3VAC				
				⑥ 7.2A				
B					74892 ②			

① Used in model TA128.
② Used in model TA129.
⑥ Use for SEC. #4.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	164Ω	1400Ω	73569	A-8122	A-4000 ③	TSO-2 ③	Vert. Block Osc. Trans.
T3	465Ω Tap ④ .5Ω, 7.8Ω, 11.6Ω, 13.8Ω, 114Ω		74588				Hor. Output Trans.
T4A	560Ω Tap ④ 10Ω		74587 ①	A-8123 ④	A-3037 ④	TSO-5 ④	Vert. Output Trans.
B			74875 ②				Vert. Output Trans.
T5A	14Ω		74263	DY-1	MD-3		Hor. Deflection Coil
B	64Ω						Vert. Deflection Coil
T6	64Ω		74585				Focus Coil

① Used in model TA128.
② Used in model TA129.
③ Drill one new mounting hole.
④ Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	7000Ω	4.7Ω	940Ω	.8Ω	74902	A-3878 ④	A-3028	RO-13 ④	④ Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	RCA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	4.7Ω	74900	ST-102 ⑦ MOD. P12-S	12A31 ⑤	⑤ Remount output transformer. ⑦ Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	V. C. DIA.				
SP2	11 7/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.250ADC	43Ω	1.3 Henries	73154	C-2326 ③	C-2991	TR-3300 ③	③ Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	RCA PART No.	MEISSNER PART No.	
L2	Ant. Trans.	0Ω	2Ω	73578		Includes socket
L3	IF Trap	.5Ω		73476		Wound on 12MMF capacitors
L4	IF Trap	.5Ω		73476		Wound on 12MMF capacitors
L5	Ant. Shunt	.4Ω		73475		
L6	Ant. Coils	0Ω		73633		Complete with stator, rotor and C6
L7	Fil. Choke	0Ω		73477		
L8	RF Coil	0Ω		74110		Includes trimmer
L9	RF Coils	0Ω		73471		Complete with stator, rotor and C11, C12, R12
L10	Coupling Coil	0Ω		73462		
L11	Mixer Grid	0Ω		74109		
L12	Mix. Grid Coils	0Ω		73470		Complete with stator, and rotor
L13	Fil. Choke	0Ω		73477		
L14	Fil. Choke	0Ω		73477		
L15	Osc. Coil	0Ω		74108		Includes fine tuning trimmer
L16	Osc. Coils	0Ω		73468		Front section complete with stator and rotor
L17	Osc. Coil	0Ω		73461		Rear section, channel 6
L18	Osc. Coils	0Ω		73469		Rear section complete with stator and rotor
L19	Osc. Coil	0Ω		73874		Front section, channel 6
L20	Conv. Trans.	.4Ω	.1Ω	73448		
L21	1st Video IF	.1Ω	.4Ω	74589		
L22	Fil. Choke	0Ω		73477		
L23	2nd Video IF	.2Ω		74590		
L24	3rd Video IF -Sound Take Off	.2Ω	0Ω	74591		
L25	Video IF Grid Choke	2.9Ω		74170		36 microhenries, wound on 8.2KΩ resistor
L26	4th Video IF	.1Ω	.1Ω	74592		
L27	Sound Trap	.1Ω		71778		
L28	5th Video IF	.2Ω	.1Ω	73575		
L29	Peaking	6.6Ω		74214	19-1921	180 microhenries, red and white dots
L30	Peaking	4.5Ω		71527	19-1920	93 microhenries, red dot
L31	4.5MC Trap	1.8Ω		73577		
L32	Peaking	8Ω		71526	19-1922	250 microhenries, green dot
L33	Peaking	8Ω		71526	19-1922	250 microhenries, green dot
L34	Peaking	6.6Ω		74214	19-1921	180 microhenries, red and white dots
L35	Peaking	8Ω		71526	19-1922	250 microhenries, green dot
L36	Sound IF	.1Ω	.1Ω	71424		
L37	Disc. Trans.	.1Ω	.1Ω	71427		
L38	Horiz. Osc. Trans.	120Ω	35Ω	73576		
L39	Horiz. Lin.	35Ω		71449		
L40	Horiz. Size	.3Ω		71429		
L41	Vert. Size			74877		Model TA129
L42	Horiz. Size Shunt Coil			71429		Model TA129
L43	Horiz. Size Expander			71429		Model TA129
L44	Horiz. Size Series Coil			74878		Model TA129

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA					REMARKS
	RCA PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		CQ-J	Q-33(J)	W21AR	A65MG	
M2		ACD-J	"A"	W22AB	A62A	

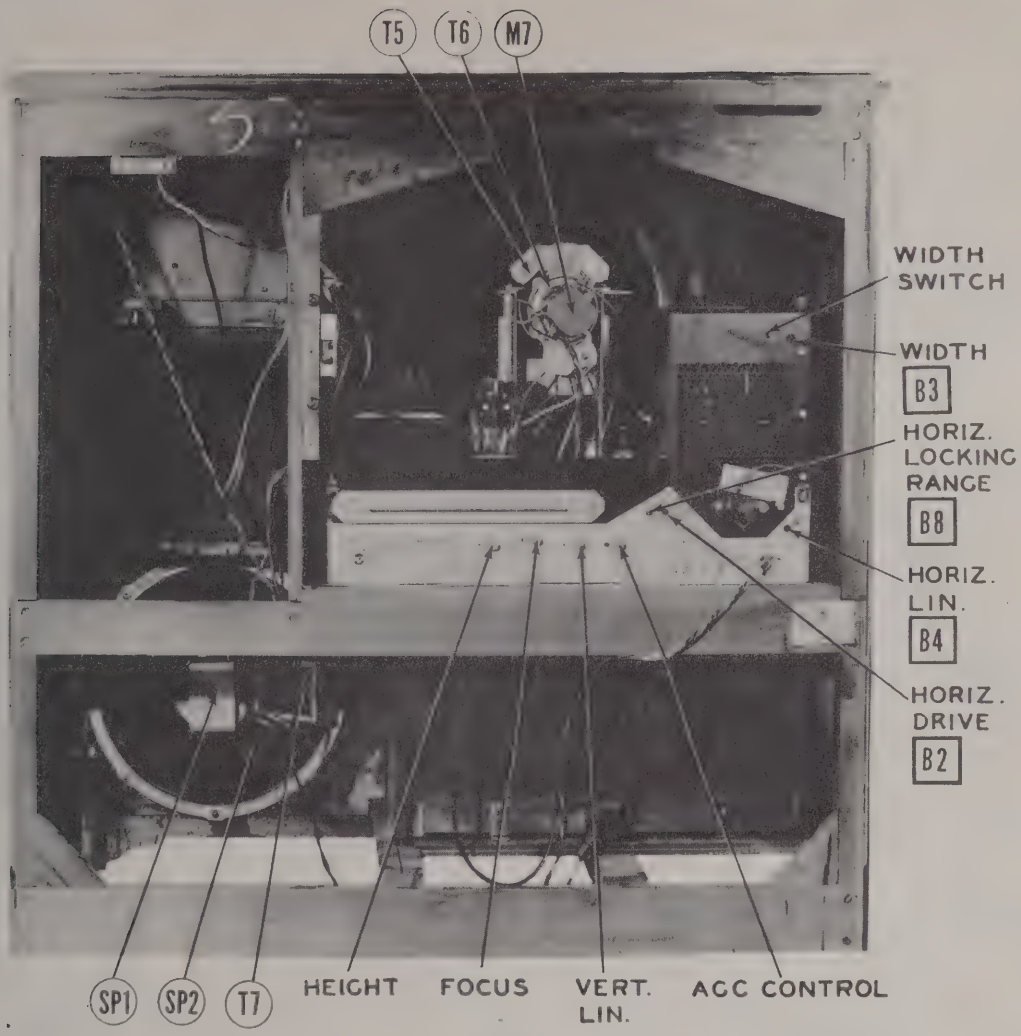
ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA PART No.		
M3	Bayonet	6-8	.2	White	11765		Type #51

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M4	RF Tuner		
M5	Fuse	73600	.25A 250V Type GJV
M6A	Switch	74147	Horiz. size, model TA128
B	Switch	74872	Horiz. size, model TA129
M7A	Ion Trap	74823	Model TA128
B	Ion Trap	74148	Model TA129
M8	Relay	74873	Picture expander, model TA129
M9	Switch	74881	Remote picture expander, model TA129
M10	Switch	74157	Cabinet interlock
	Safety Glass	74755	
	Escutcheon	73642	Channel selector (Dark)
	Escutcheon	73740	Channel selector (Tan)
	Knob	74960	Channel selector (Dark)
	Knob	74961	Channel selector (Tan)
	Knob	74959	Fine tuning (Dark)
	Knob	73995	Fine tuning (Tan)
	Knob	74962	Vert. hold, brightness, tone (Dark)
	Knob	73999	Vert. hold, brightness, tone (Tan)
	Knob	74963	Horiz. hold, contrast, volume (Dark)
	Knob	74001	Horiz. hold, contrast, volume (Tan)
	Knob	74978	Tuning, function switch (Dark)
	Knob	74979	Tuning, function switch (Tan)
	Trimmer	74593	2 section - Horiz. drive 40-370MMF, Horiz. range 3-35MMF



CABINET-REAR VIEW

CRITICAL LEAD DRESS

1. The ground bus from pin 2 and the center shield of V11 socket should not be shortened or rerouted.
2. Do not change the dress of the filament leads or the bypass capacitors in the picture or sound IF circuits. The filament leads between V11, V12 and V13 should be down against the chassis and away from grid or plate leads.
3. If it is necessary to replace any of the 1500MMF capacitors in the picture IF circuit, the lead length must be kept as short as possible.
4. Picture IF coupling capacitors C30, C36, C40 and C47 should be up and away from the chassis and should be clear of the pix IF transformer adjustments by at least 1/4 inch. If the dress of any of these capacitors is changed, the IF alignment should be rechecked.
5. Leads to L37 and L29 must be as short as possible.
6. Dress peaking coils L34, L33 and L35 up and away from the chassis.
7. Dress C61 across tube pins 5 and 6 with leads not exceeding 3/8 inch.
8. Dress C52 and C53 up and away from the chassis.
9. Dress the yellow lead from the picture control away from the chassis and away from the volume control leads. Dress the yellow lead from pin 8 of V9 away from the chassis.
10. Dress the green lead from pin 2 of V9 away from the chassis.
11. Dress R109, R108, R107, R114 and R110 up and away from the chassis.
12. The leads to the volume control should be dressed down against the chassis and away from V11 and V12.
13. Contact between the RF oscillator frequency adjustment screws and the oscillator coils or channel switch eyelets must be avoided.
14. Dress leads from L42 (width control coil) away from the transformer frame.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove ten push-on type control knobs.
2. Remove eight wood screws from rear cover. Remove rear cover.
3. Remove built-in antenna.
4. Remove antenna terminal strip.
5. Remove interlock switch control.
6. Remove power leads from both phonographs.
7. Disconnect jewel light located near bottom of cabinet.
8. Disconnect speaker.
9. Remove five 7/16" hex head bolts holding chassis in cabinet. Remove chassis.
10. Remove four 5/16" nuts from speaker. Remove speaker.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT CHECK

Turn in a test pattern and turn the horizontal hold control fully counter-clockwise. The picture should remain in synchronization. Momentarily remove signal by switching to another channel and back to the original channel. The picture will usually remain in synchronization. If the picture did not remain in "sync", the number of blanking bars appearing on the screen will gradually reduce until only 2 bars are seen sloping downward to the left. A slight additional clockwise rotation of the hold control will pull the picture into "sync". The picture should remain in synchronization for approximately 180^0 additional rotation of the hold control. Turn the hold control, fully clockwise and the picture will be out of "sync" with one diagonal bar appearing.

If the receiver does not function in this manner, a horizontal sweep circuit adjustment will be required.

HORIZONTAL FREQUENCY ADJUSTMENT

Connect a short between terminals C and D of L38.

Turn the set on and tune in a TV station preferably a test pattern. Turn the horizontal hold control fully clockwise and adjust the horizontal frequency slug (B1) until the blanking signal appears as a single vertical line in the raster. Turn the hold control 1/4 turn counter-clockwise to sync the picture.

Adjust the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right side of the picture. If receiver being aligned is model TA128, turn the width selector switch to position 1 and adjust the width slug (B3) until picture is of proper width. If sufficient width is not obtained, turn the width selector switch to position 2 or 3. In position 2 or 3 the width coil (B3) is removed from the circuit. Adjust the horizontal linearity slug (B4) until picture is symmetrical from left to right. A slight readjustment of B2 may be necessary for optimum results. (If receiver being aligned is model TA129 connect the "Electronic Magnifier" switch to its socket and set switch to the expanded picture position. Turn the Expanded Width Selector switch to position 1, and adjust expanded width coil (B5) until outer circle of test pattern is at the side of the picture. If width is not sufficient turn the width expanded switch to position 2 or 3 and adjust B2 and the horizontal linearity slug (B4) until picture is symmetrical from left to right. Turn the "Electronic Magnifier" switch to normal position. If the width is not correct adjust either the series width coil (B6) or the shunt width coil (B7) until the picture is of proper width.)

Turn the hold control fully counter-clockwise and momentarily remove the signal by switching to another channel and back again. Turn the hold control slowly clockwise and note the least number of bars present just before the picture pulls into synchronization. Adjust the horizontal lock trimmer B8 until 7 to 9 bars are present just before pull-in.

HORIZONTAL WAVEFORM ADJUSTMENT

Remove the short from terminals C and D of L38.

Turn the horizontal hold control fully clockwise and adjust the horizontal waveform slug (B9) until the blanking signal appears.

Connect the low capacity probe of an oscilloscope to terminal C of L38 and chassis. Adjust B9 and B1 alternately until the broad and narrow peaks are of equal amplitude as shown in figure 6. If necessary during this adjustment turn the hold control to keep picture in "sync".

Turn the hold control fully counter-clockwise and momentarily remove the signal. Adjust B8 until 3 bars are present just before pull-in. Turn the hold control fully clockwise and adjust B1 until blanking bars appear as s a single vertical line. Turn the hold control 1/4 turn counter-clockwise to synchronize picture.

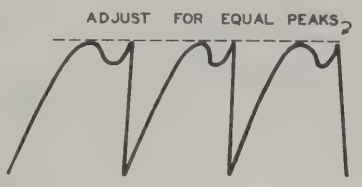


FIG.6

SHOP ADJUSTMENT

Connect the vertical amplifier of an oscilloscope to pin 1 of 12AU7 (V9) and chassis. Turn the set on and tune in a TV station. Turn the contrast control fully clockwise and adjust the AGC threshold control for maximum response without clipping the sync pulses.

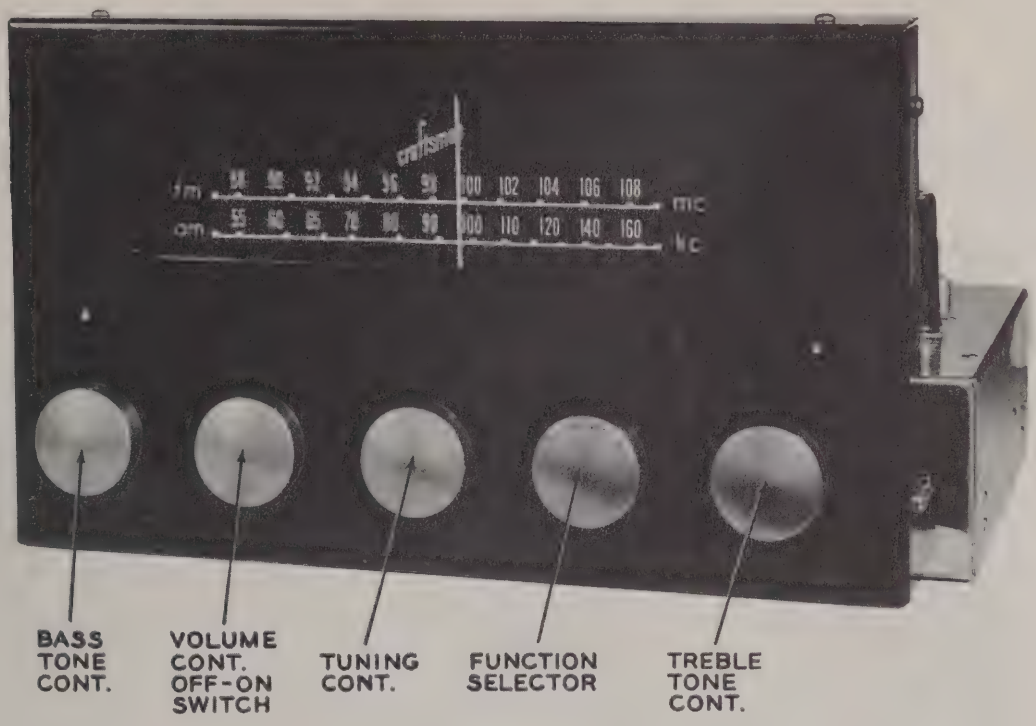
AGC ADJUSTMENT

FIELD ADJUSTMENT

Tune in a TV station and sync the picture. Turn the contrast control fully clockwise and the brightness control counter-clockwise until the vertical retrace lines are just visible. Turn the AGC control fully clockwise. The top 1/2 inch of the picture may be bent slightly which is normal. Turn the AGC control counter-clockwise until there is a change of the bend of the top 1/2 inch of the picture. Turn the AGC control clockwise to remove the bend. If there is a weak signal turn the AGC control counter-clockwise until snow in the picture is more pronounced and then turn control clockwise for best signal to noise ratio.

VERTICAL HEIGHT AND LINEARITY ADJUSTMENT

Turn the magnifier switch to normal position. Adjust the height control and vertical linearity control for best linearity from top to bottom. If it is difficult in obtaining good linearity of top 1/2 inch of picture, adjust the vertical size coil (B10) for optimum results.

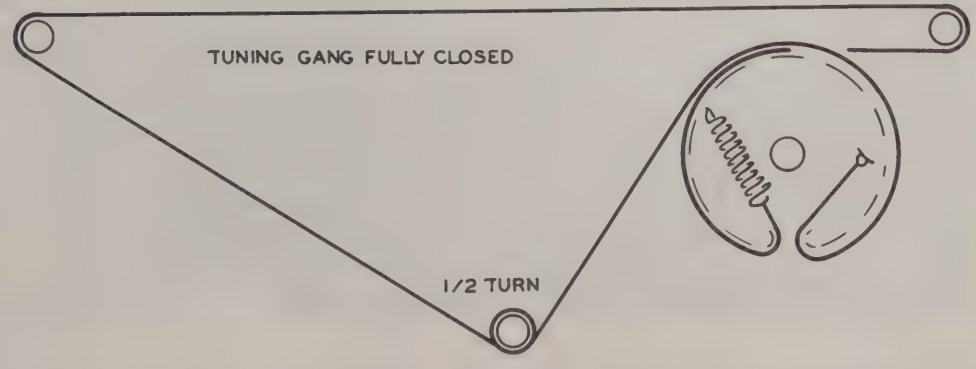


RADIO CRAFTSMEN
MODEL RC-10

RADIO CRAFTSMEN
MODEL RC-10

RADIO CRAFTSMEN MODEL RC-10

TRADE NAME	Radio Craftsmen, Model RC-10		
MANUFACTURER	The Radio Craftsmen Inc., 1617 S. Michigan Ave., Chicago 16, Illinois		
TYPE SET	AC Operated AM-FM Superheterodyne Tuner with Power Supply		
TUBES (TWELVE)	Types 6AB4 1st FM RF Amp., 6CB6 2nd FM-AM RF Amp., 12AT7 FM-AM Mixer, FM-AM Osc.-AFC, 6CB6 1st FM-AM IF Amp., 6CB6 2nd FM IF Amp, 9001 1st Limiter, 9001 2nd Limiter, 6AL5 Disc., 6AV6 DET-AVC-Phono Amp., 12AU7 AF Amp., 6X5GT Rectifier		
POWER SUPPLY	105-125 Volts AC	RATING	.44 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	535-1620KC	FREQ. MOD.	88-108MC



DIAL CORD DRIVE

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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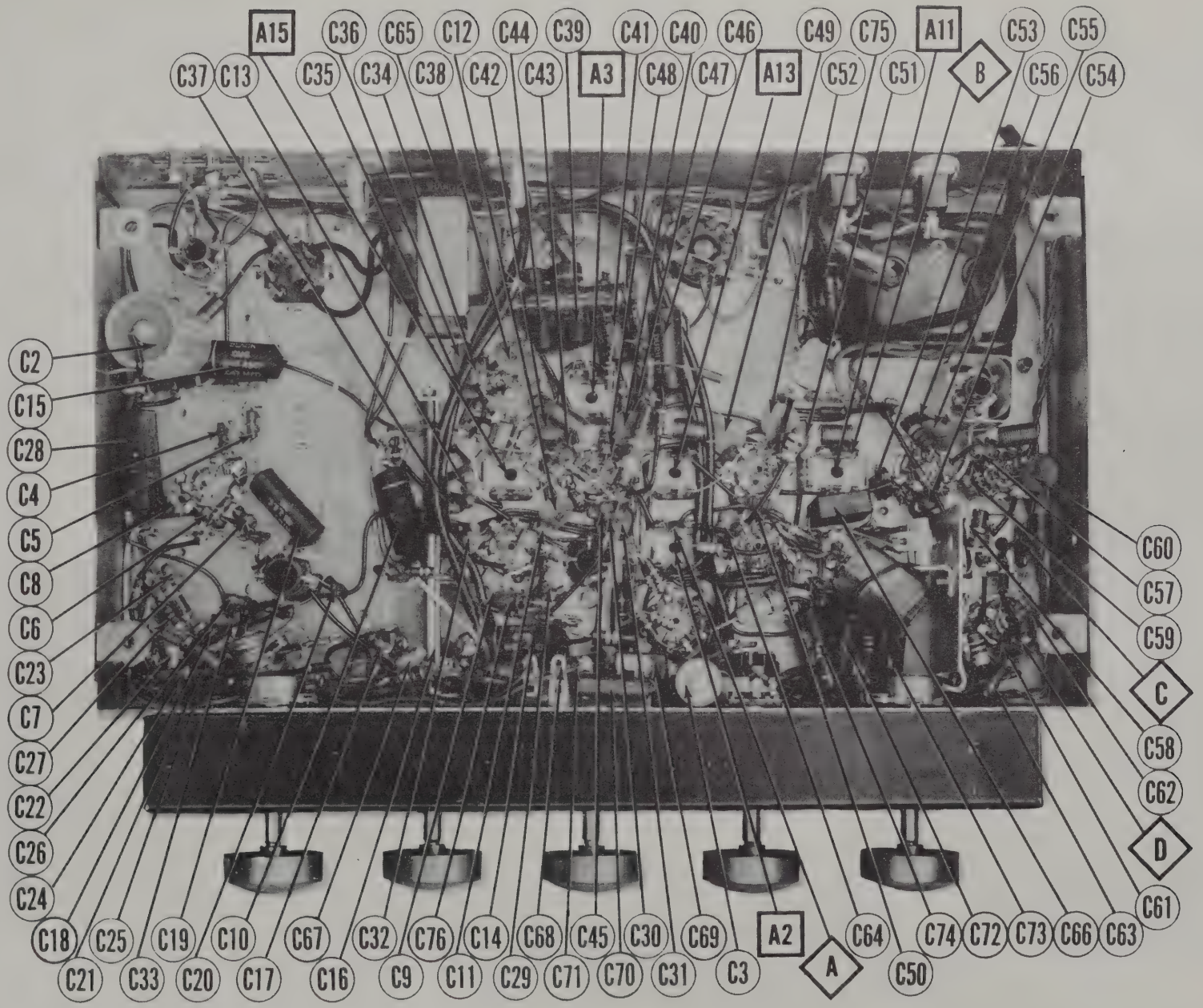

A15
C36
C65
C12
C44
C39
C41
C40
C46
C49
C75
A11
C53
C55
C37
C13
C35
C34
C38
C42
C43
A3
C48
C47
A13
C52
C51
B
C56
C54
C2
C15
C28
C4
C5
C8
C6
C23
C7
C27
C22
C26
C24
C60
C57
C59
C
C58
C62
D
C61
C18
C25
C19
C10
C67
C32
C76
C14
C68
C45
C30
C69
A2
C64
C74
C72
C73
C66
C63
C21
C33
C20
C17
C16
C9
C11
C29
C71
C70
C31
C3
A
C50

RADIO CRAFTSMEN
MODEL RC-10

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RADIO CRAFT. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	1st FM RF	6BA4	6BA4	5CE	
V2	2nd FM-AM RF	6CB6	6CB6	6CK	
V3	FM-AM Mixer	12AT7	12AT7	9A	
V4	FM-AM Osc. -AFC	12AT7	12AT7	9A	
V5	1st FM-AM IF	6CB6	6CB6	6CK	
V6	2nd FM IF	6CB6	6CB6	6CK	
V7	1st Limiter	9001	9001	7BD	
V8	2nd Limiter	9001	9001	7BD	
V9	Discriminator	6AL5	6AL5	6BT	
V10	DET-AVC-Phono	6AV6	6AV6	7BT	
V11	AF Amp.	12AU7	12AU7	9A	
V12	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RADIO CRAFT. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	300	18S022	AF8842G		UPT44445		TVL-4579	● Filter
B	40	300				BR2035A		TVA-1608	■ Filter
C	30	300							▲ Filter
D	20	300							Filter
C2	40	250	18X027	PRS450/40		BR4025		TVA-1511	Decoupling
C3	10	250	18X023	PRS250/12		BR1025		TVA-1504	Audio Coupling
C4	100		18X605	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C5	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	1st FM RF Cath.
C6	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	1st FM RF Dec.
C7	22		18X603	SI22	D6-220	5W5Q25	GP1K-22	19C23	RF Coupling
C8	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	1st FM RF Fil.
C9	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	2nd RF Cath.
C10	.047	400	18Z254	P488-047	DF-503	PTE4S5		4TM-473	2nd RF Cath.
C11	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	2nd RF Dec.
C12	10000		18X704	BPD-01	DD-103	PTE4S1	811-01	36C1	2nd RF Dec.
C13	22		18X603	SI22	D6-220	5W5Q25	GP1K-22	19C23	RF Coupling
C14	.047	400	18Z254	P488-047	DF-503	PTE4S5		4TM-473	AVC Filter
C15	.047	400	18Z254	P488-047	DF-503	PTE4S5		4TM-473	AVC Filter
C16	22		18X603	SI22	D6-220	5W5Q25	GP1K-22	19C23	Osc. Grid Cap.
C17	15		18X602	SI15	D6-150	5W5Q2	GP1K-15	19C22	Osc. Grid Cap.
C18	47		18X604	SI47	D6-470	5W5Q5	GP1K-47	19C25	Osc. Plate Dec.
C19	.047	400	18Z254	P488-047	DF-503	PTE4S5		4TM-473	Osc. Plate Dec.
C20	10		18X601	SI10	D6-100	5W5Q1	GP1K-10	19C19	Fixed Trimmer
C21	22		18X603	SI22	D6-220	5W5Q25	GP1K-22	19C23	AFC Coupling
C22	2		18X612		TCZ-2.2				Phase Shifter
C23	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	RF Bypass
C24	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	RF Bypass
C25	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C26	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	AFC Cath.
C27	100		18X605	SI100	D6-101	5W5T1	GP1K-100	19C11	AFC Filter
C28	.1	400	18Z264	P488-1	DF-104	PTE4P1		4TM-1	AFC Filter
C29	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	RF Bypass
C30	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	RF Bypass
C31	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C32	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	2nd RF Fil.
C33	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	Osc. -AFC Fil.
C34	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	FM Mixer Cath.
C35	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	FM Mixer Cath.
C36	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	FM Mixer Plate. Dec.
C37	100		18X605	SI100	D6-101	5W5T1	GP1K-100	19C11	FM Mixer Plate Dec.
C38	10000		18X704	BPD-01	DD-103	PTE4S1	811-01	36C1	AM Mixer Cath.
C39	.047	400	18Z254	P488-047	DF-503	PTE4S5		4TM-473	AM Mixer Plate Dec.
C40	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C41	.047	400	18Z254	P488-047	DF-503	PTE4S5		4TM-473	AVC Filter
C42	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	Mixer Fil. Bypass
C43	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Cath.
C44	.047	400	18Z254	P488-047	DF-503	PTE4S5		4TM-473	1st IF Cath.
C45	1000		18X614	SI1000	D6-102	1W5D1	GP2L-001	19C1	1st IF Dec.
C46	.047	400	18Z254	P488-047	DF-503	PTE4S5		4TM-473	1st IF Dec.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RADIO CRAFT. PART No.	IRC PART No.	IDENTIFICATION CODES
R23	220KΩ	1/2	23Z025	BTS-220K	AVC Network
R24	100KΩ	1/2	23Z005	BTS-100K	RF Transformer Shunt
R25	2400Ω	1/2		BTS-2200	AM Mixer Cathode-See Note 2
R26	220KΩ	1/2	23Z025	BTS-220K	AVC Network
R27	150Ω	1/2	23Z012	BTS-150	Decoupling
R28	220Ω	1/2	23Z022	BTS-220	1st FM-AM-IF Amp. Cathode
R29	24KΩ	1/2		BTS-22K	IF Transformer Shunt-See Note 4
R30	100KΩ	1/2	23Z005	BTS-100K	IF Transformer Shunt
R31	1 Meg.	1/2	23Z006	BTS-1 Meg.	AVC Network
R32	3.3 Meg.	1/2	23Z036	BTS-3.3 Meg.	AVC Network
R33	68KΩ	1/2	23Z064	BTS-68K	IF Transformer Shunt
R34	220KΩ	1/2	23Z025	BTS-220K	IF Transformer Shunt
R35	1000Ω	1/2	23Z003	BTS-1000	1st IF Amp. Decoupling
R36	150Ω	1/2	23Z012	BTS-150	Decoupling
R37	220Ω	1/2	23Z022	BTS-220	2nd FM IF Amp. Cathode
R38	68KΩ	1/2	23Z064	BTS-68K	IF Transformer Shunt
R39	1000Ω	1/2	23Z003	BTS-1000	2nd FM IF Amp. Decoupling
R40	150Ω	1/2	23Z012	BTS-150	Decoupling
R41	100KΩ	1/2	23Z005	BTS-100K	1st Limiter Grid
R42	15KΩ	1/2	23Z014	BTS-15K	Voltage Divider
R43	22KΩ	1	23Z124	BTA-22K	1st Limiter Decoupling
R44	130KΩ	1/2		BTS-150K	2nd Limiter Grid-See Note 5
R45	47KΩ	1	23Z144	BTA-47K	2nd Limiter Decoupling
R46	47KΩ	1/2	23Z044	BTS-47K	Voltage Divider
R47	150Ω	1/2	23Z012	BTS-150	Decoupling
R48	100KΩ	1/2	23Z005	BTS-100K	Disc. Diode Load
R49	100KΩ	1/2	23Z005	BTS-100K	Disc. Diode Load
R50	180KΩ	1/2		BTS-180K	De-emphasis-See Note 5
R51	470KΩ	1/2	23Z045	BTS-470K	Diode Load
R52	2.2 Meg.	1/2	23Z026	BTS-2.2 Meg.	Diode Load
R53	1 Meg.	1/2	23Z006	BTS-1 Meg.	AVC Network
R54	2.2 Meg.	1/2	23Z026	BTS-2.2 Meg.	Phono Amp. Grid
R55	220KΩ	1/2	23Z025	BTS-220K	Phono Amp. Plate
R56	130KΩ	1/2		BTS-150K	Tone Compensation-See Note 5
R57	68KΩ	1/2	23Z064	BTS-68K	Tone Compensation
R58	1 Meg.	1/2	23Z006	BTS-1 Meg.	Tone Compensation
R59	680KΩ	1/2	23Z065	BTS-680K	AF Amp. Grid
R60	470Ω	1/2	23Z042	BTS-470	AF Amp. Cathode
R61	2400Ω	1/2		BTS-2200	AF Amp. Cathode-See Note 2
R62	22KΩ	1	23Z124	BTA-22K	AF Amp. Plate
R63	47KΩ	1/2	23Z044	BTS-47K	Tone Compensation
R64	47KΩ	1/2	23Z044	BTS-47K	Tone Compensation
R65	6800Ω	1/2	23Z063	BTS-6800	Tone Compensation
R66	4700Ω	1/2	23Z043	BTS-4700	Tone Compensation
R67	470KΩ	1/2	23Z045	BTS-470K	AF Amp. Grid
R68	470Ω	1/2	23Z042	BTS-470	AF Amp. Cathode
R69	470Ω	1/2	23Z042	BTS-470	AF Amp. Cathode
R70	10KΩ	1	23Z104	BTA-10K	AF Amp. Plate
R71	2200Ω	2	23Z223	BTB-2200	Filter
R72	1500Ω	10	23X611	1 3/4A-1500	Filter-Wire Wound
R73	100KΩ	1/2	23Z005	BTS-100K	Voltage Divider
R74	33KΩ	1/2	23Z034	BTS-33K	Voltage Divider
R75	3Ω	1/2		BTS-3.3	Series Dial Lamp -See Note 6
R76	2200Ω	1	23Z123	BTA-2200	Filter

Note 1. Some models use a 330Ω resistor in this application.
Note 2. Some models use a 2200Ω resistor in this application.
Note 3. Some models use a 68Ω resistor in this application.
Note 4. Some models use a 22KΩ resistor in this application.
Note 5. Some models use a 150KΩ resistor in this application.
Note 6. Some models use a 3.3Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: RADIO CRAFT. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .44A	440VCT .060ADC	6.3VAC @ 1.2A	6.3VAC @ 2.6A	19S208			

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RADIO CRAFT. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C47	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C48	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Fil.
C49	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Cath.
C50	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Dec.
C51	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C52	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Fil.
C53	47		18X604	SI47	D6-470	5W5Q5	GP1K-47	19C25	1st Limiter Grid
C54	1000		18X614	SI1000	D6-102	1W5D1	GP2L-001	19C1	1st Limiter Dec.
C55	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	1st Limiter Fil.
C56	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C57	22		18X603	SI22	D6-220	5W5Q25	GP1K-22	19C23	IF Coupling
C58	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C59	1000		18X614	SI1000	D6-102	1W5D1	GP2L-001	19C1	2nd Limiter Dec.
C60	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	2nd Limiter Fil.
C61	100		18X605	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Bypass
C62	5000		18X701	BPD-005	DD-502	1D5D5	811-005	29C1	Discr. Fil.
C63	470		18X606	SI470	D6-471	5W5T5	GP2K-470	19C15	De-emphasis
C64	100		18X605	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C65	.022	400	18Z214	P488-022	DF-203	PTE4S2		4TM-223	Audio Coupling
C66	6800	500	18X412	P688-0068	D6-682	1D3D7		6TM-682	Tone Comp.
C67	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	Tone Comp.
C68	.022	400	18X214	P488-022	DF-203	PTE4S2		4TM-223	Audio Coupling
C69	.1	400	18Z264	P488-1	DF-104	PTE4P1		4TM-1	Audio Coupling
C70	.01	400	18Z234	P488-01	D6-103	PTE4S1	811-01	4TM-11	Tone Comp.
C71	.0033	600	18X414	P688-0033	D6-332	PTE6D3	GP2M-0033	6TM-23	Tone Comp.
C72	.0047	400	18X407	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-472	Tone Comp.
C73	.047	400	18X308	P488-047	DF-503	PTE4S5		4TM-473	Tone Comp.
C74	.022	400	18Z214	P488-022	DF-203	PTE4S2		4TM-223	Audio Coupling
C75	.01	600	18Z236	P688-01	D6-103	PTE6S1	811-01	6TM-11	Line Filter
C76	220		18X620	SI220	D6-221	5W5T25	GP2K-220	19C13	RF Bypass *

* Not used in all models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Radio Craft. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	10KΩ	½	23S716	Q13-116	AG-81-Z		Volume control
B	Shaft		Not Req.	Not Req.	KSS-3		Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB		Attach to R1A per instructions
R2A	500KΩ	½	23S717	Q11-133	AG-58-S	AN-59	Treble tone control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	500KΩ	½	23S715	Q13-133	AG-60-Z	AN-60	Bass tone control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R3A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RADIO CRAFT. PART No.	IRC PART No.	IDENTIFICATION CODES
R4	100Ω		23Z002	BTS-100	1st FM RF Amp. Cathode
R5	10KΩ		23Z004	BTS-10K	1st FM RF Amp. Plate
R6	10KΩ		23Z004	BTS-10K	1st FM RF Amp. Plate Decoupling
R7	350Ω			BTS-330	2nd RF Amp. Cathode-See Note 1
R8	1000Ω		23Z003	BTS-1000	2nd RF Amp. Decoupling
R9	2400Ω			BTS-2200	FM Mixer Cathode-See Note 2
R10	33KΩ		23Z034	BTS-33K	Osc. Grid
R11	1000Ω		23Z003	BTS-1000	Osc. Plate
R12	47KΩ	1	23Z144	BTA-47K	Bias Network
R13	330Ω		23Z032	BTS-330	AFC Cathode
R14	220Ω		23Z022		Parasitic Suppressor
R15	10KΩ	1	23Z104	BTA-10K	AFC Plate
R16	100KΩ		23Z005	BTS-100K	AFC Grid
R17	1 Meg.		23Z006	BTS-1 Meg.	AFC Network
R18	10Ω				Parasitic Suppressor
R19	150Ω		23Z012	BTS-150	Decoupling
R20	1000Ω		23Z003	BTS-1000	Mixer Plate Decoupling
R21	51Ω				Parasitic Suppressor-See Note 3
R22	100KΩ		23Z005	BTS-100K	Antenna Transformer Shunt

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA RADIO CRAFT. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.060ADC	200Ω	6 Henries	19S405	C-1709 ①		R-885 ①	① Drill one new mounting hole.

10 KC FILTER

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA RADIO CRAFT. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L2		1750Ω	1 Henry	19S406				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RADIO CRAFT. PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L3	FM Ant.	0Ω		5X409			
L4	1st FM RF	0Ω		5A210			
L5	RF Choke	3.4Ω		5S402		CLA-3.3	3.3 microhenries
L6	2nd FM RF	0Ω		5A209			
L7	FM Osc.	0Ω	0Ω	5A208			
L8	AM Ant.	27Ω	4.5Ω	5A220			
L9	AM RF	155Ω	5Ω	5A219			
L10	AM Osc.	1.4Ω	5.8Ω	5A218			Secondary taped at .8Ω
L11	1st AM IF	8.5Ω	19Ω	5X015			
L12	1st FM IF	.5Ω	.8Ω	5X013			
L13	2nd AM IF	19Ω	19Ω	5X016	16-6770		
L14	2nd FM IF	1.1Ω	1.1Ω	5X014	16-3487		
L15	3rd FM IF	1.1Ω	1.1Ω	5X014	16-3487		
L16	4th FM IF	.5Ω		5X017			
L17	Disc. Trans.	.6Ω	.8Ω	5X005			
L18	RF Choke	4.4Ω				CL-1-3.9	3.9 microhenries
L19	Fil. Choke	0Ω		5X406			1 microhenries
L20	Fil. Choke	0Ω		5X406			1 microhenries
L21	Fil. Choke	0Ω		5X406			1 microhenries
L22	Fil. Choke	0Ω		5X406			1 microhenries
L23	Fil. Choke	0Ω		5X406			1 microhenries

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RADIO CRAFT. PART No.		NOTES
M1	Bayonet	6-8	.25	Blue	15X003		Type #44
M2	Bayonet	6-8	.25	Blue	15X003		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	RADIO CRAFT. PART No.	NOTES
M3	Switch	4S006	Function
M4	Switch	4S007	Phono
M5	3 Gang Var. Cap.	17S007	(10-408MMF, 10-408MMF, 8-180MMF)
A10	Trimmer	17X205	10KC Trap Adj.
A20	Trimmer	17X401	FM Osc. Adj.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer 2 23/32" from left hand edge of dial backing plate.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (Grid) of 12AT7 (V3). Low side to chassis.	455KC (400 ∿ Mod.)	AM (1st position CW)	Tuning gang fully open	DC Probe to Point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	220MMF	High side to "AM" antenna terminals. Low side to chassis.	1500KC	"	Turn tuning gang until pointer is 3 21/32" from right hand edge of dial backing plate.	"	A5	"
3.	220MMF	"	600KC	"	Tune for max. output	"	A6, A7	"
4.	220MMF	"	1400KC	"	"	"	A8, A9	Adjust for maximum deflection. Repeat steps 3 and 4 until no further improvement can be made.
5.	220MMF	"	1400KC (10KC Mod.)	"	"	"	A10	Adjust for minimum deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 2 (Grid) of 12AT7 (V3). Low side to chassis.	10.7MC (Unmod.)	FM (fully CCW)	Tuning gang fully open	DC Probe to Point (B). Common to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
7.	.01MFD	"	"	"	"	DC Probe to Point (C). Common to chassis.	A17, A18	"
8.	.01MFD	"	"	"	"	DC Probe to Point (D). Common to chassis.	A19	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 2 (Grid) of 12AT7 (V3). Low side to chassis.	10.7MC (450KC SWP)	FM (fully CCW)	Tuning gang fully open	Vert. Amp. thru 10KΩ to Point (B). Low side to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum amplitude and symmetry as per figure 1.
7.	.01MFD	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A17, A18, A19	Adjust A19 to place 10.7MC at center of diagonal line as per figure 2. Adjust A17 tand A18 for maximum amplitude and straightness of diagonal line. Continue with step 9.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	270Ω carbon res.	High side thru 270Ω to "FM" antenna terminal. Low side to chassis.	106MC	FM (fully CCW)	Turn tuning gang until pointer is 4" from right hand edge of dial backing plate.	DC Probe to Point (B). Common to chassis.	A20	Adjust for maximum deflection.
10.	"	"	98MC	"	Tune for max. response	"	L3, L4, L6	Expand or compress coil turns for maximum deflection.

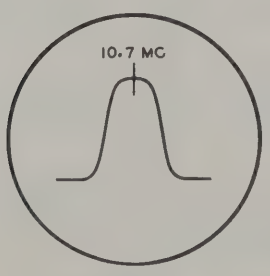


FIG. 1

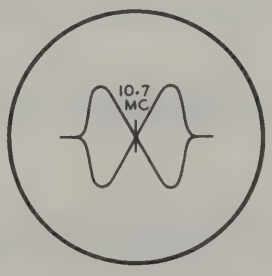
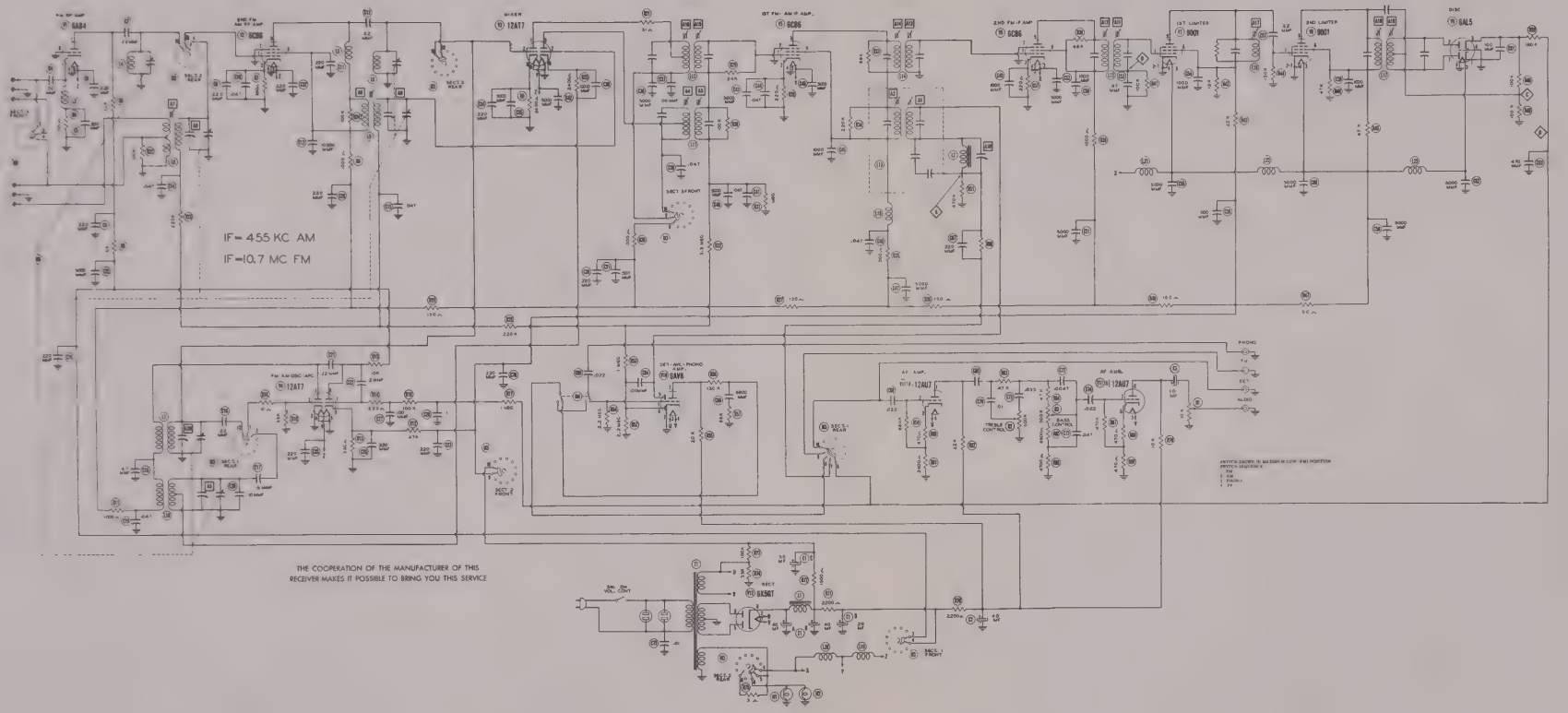


FIG. 2



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AB4	‡85VDC	0V.	‡▲6.3VAC #0V.	0V.	0V.	0V.	‡.4VDC		
V 2	6CB6	‡0V. ▲-2.6VDC	‡2.3VDC ▲1.8VDC	0V.	‡▲6.3VAC #0V.	‡130VDC ▲140VDC	‡130VDC ▲140VDC	0V.		
V 3	12AT7	‡135VDC ▲0V.	0V.	‡2.5VDC ▲.3VDC	0V.	0V.	‡0V. ▲145VDC	‡-.8VDC ▲-.2VDC	‡0V. ▲2.6VDC	‡▲6.3VAC #0V.
V 4	12AT7	#130VDC ▲150VDC	§‡-1.8VDC §▲-13.5VDC	0V.	0V.	0V.	‡150VDC ▲0V.	‡0V. ▲.2VDC	‡1.8VDC ▲1.2VDC	‡▲6.3VAC #0V.
V 5	6CB6	0V.	2VDC	‡▲6.3VAC #0V.	0V.	‡130VDC ▲135VDC	‡130VDC ▲135VDC	0V.		
V 6	6CB6	‡0V.	‡2VDC	‡▲6.3VAC #0V.	0V.	‡135VDC	‡135VDC	0V.		
V 7	9001	‡-.2VDC	0V.	‡▲6.3VAC #0V.	0V.	‡37VDC	‡37VDC	0V.		
V 8	9001	‡-.4VDC	0V.	‡▲6.3VAC #0V.	0V.	‡33VDC	‡33VDC	0V.		
V 9	6AL5	0V.	‡-.6VDC	‡▲6.3VAC #0V.	0V.	‡-.5VDC	0V.	‡-.6VDC		
V 10	6AV6	-.5VDC	0V.	¶	¶	-.6VDC	-.6VDC	‡▲70VDC #85VDC		
V 11	12AU7	‡▲83VDC #100VDC	1.4VDC	‡▲10VDC #13VDC	¶	¶	‡▲110VDC #130VDC	.9VDC	‡▲5.5VDC #6.4VDC	¶
V 12	6X5GT	0V.	¶	200VAC	0V.	200VAC	0V.	¶	‡▲225VDC #265VDC	

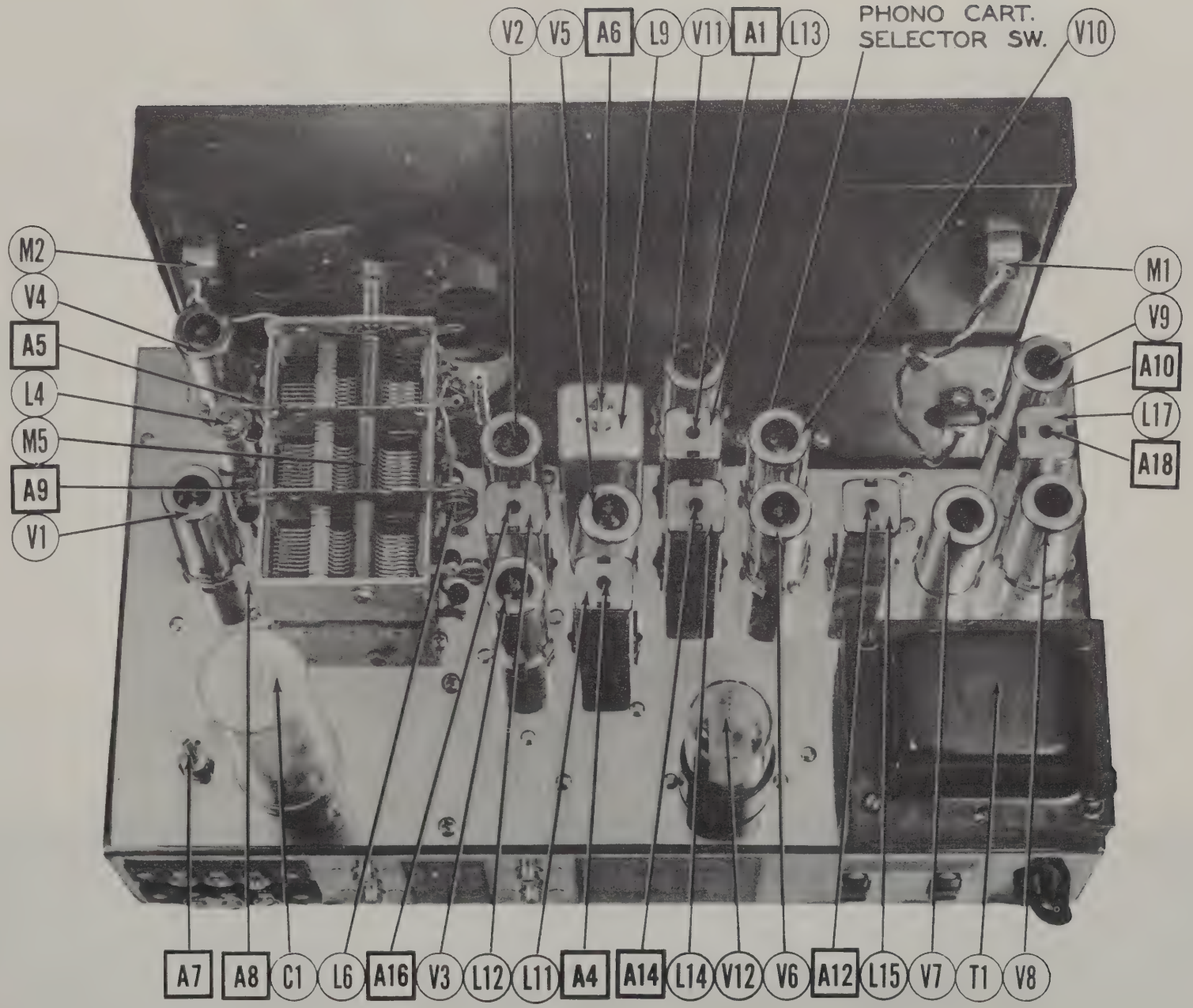
‡ TAKEN IN "FM" POSITION.
▲ TAKEN IN "AM" POSITION.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
# TAKEN IN PHONO & TV POSITIONS.
¶ 6.3VAC MEASURED ACROSS FILAMENTS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AB4	‡‡22KΩ	0Ω	‡▲.2Ω #.5Ω	0Ω	0Ω	0Ω	100Ω		
V 2	6CB6	‡0Ω ▲2.4 Meg.	350Ω	0Ω	‡▲.2Ω #.5Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 3	12AT7	‡‡ 3.1KΩ †▲ Inf.	0Ω	2.4KΩ	0Ω	0Ω	‡‡Inf. †▲3.1KΩ	2.2 Meg.	2.4KΩ	‡▲.2Ω #.5Ω
V 4	12AT7	†3.5KΩ	33KΩ	0Ω	0Ω	0Ω	‡‡12KΩ † ▲ Inf.	1.5 Meg.	330Ω	‡▲.2Ω #.5Ω
V 5	6CB6	1 Meg.	220Ω	‡▲ .2Ω #.5Ω	0Ω	†2.9KΩ	†2.9KΩ	0Ω		
V 6	6CB6	‡ 1.1Ω	‡ 220Ω	‡ ▲ .2Ω #.5Ω	0Ω	‡ † 2.8KΩ	‡ † 2.8KΩ	0Ω		
V 7	9001	‡100KΩ	0Ω	‡ ▲ .2Ω #.5Ω	0Ω	‡ †17KΩ	‡ † 17KΩ	0Ω		
V 8	9001	‡130 KΩ	-Ω	‡ ▲ .2Ω #.5Ω	0Ω	‡ † 28KΩ	‡ † 28KΩ	0Ω		
V 9	6AL5	0Ω	‡ 100KΩ	#.5Ω	0Ω	‡ 200KΩ	0Ω	‡ 100KΩ		
V 10	6AV6	2.2 Meg.	0Ω	25KΩ	25KΩ	470KΩ	1.6 Meg.	†220KΩ		
V 11	12AU7	†25KΩ	680KΩ	2.9KΩ	25KΩ	25KΩ	†13KΩ	470KΩ	940Ω	25KΩ
V 12	6X5GT	Inf.	25KΩ	95Ω	Inf.	95Ω	Inf.	25KΩ	‡ ▲ 16KΩ #60KΩ	

‡ TAKEN IN "FM" POSITION.
▲ TAKEN IN "AM" POSITION.
† MEASURED FROM PIN 8 OF V12.
# TAKEN IN PHONO AND TV POSITIONS.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.


V2
V5
A6
L9
V11
A1
L13
PHONO CART.
SELECTOR SW.
V10
M2
V4
A5
L4
M5
A9
V1
M1
V9
A10
L17
A18
A7
A8
C1
L6
A16
V3
L12
L11
A4
A14
L14
V12
V6
A12
L15
V7
T1
V8

SILVERTONE MODEL 220 (Ch. 528.173)
(BATTERY-LINE OPERATED)

SILVERTONE MODEL 220 (Ch. 528.173)
(BATTERY-LINE OPERATED)

SILVERTONE MODEL 220

TRADE NAME	Silvertone, Model 220 (Ch. 528.173)
SUPPLIER	Sears, Roebuck and Co., 925 So. Homan St., Chicago, Illinois
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES(FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 7.5 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	.15 Amp. at 117 Volts AC or 64MA at 7.5 Volts DC and 13MA at 90 Volts DC
TUNING RANGE—BROADCAST	540-1625KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer parallel with base of dial.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator to B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 1R5. Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.	.1MFD	"	1625KC	"	"	A5	"
3.		Loop	1400KC	Tune for max. output	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	DET-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	T18-296	AF106D40A		UP4415C11		R1055	▲ Filter
B	30	150							■ Filter
C	200	25							▲ Filament Bypass
C2	.05	200	T16-152	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	47		T15-229	SI47	D6-470	5W5Q5	GPIK-47	19C25	Osc. Grid Cap.
C4	.01	400	T16-156	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Osc. Anode Dec.
C5	.1	200	T16-157	P288-1	DF-104	PTE4P1		2TM-P1	Filament Bypass
C6	.005	600	T16-153	P688-005	D6-502	PTE6D5	811-005	6TM-D5	IF Grid
C7	.05	200	T16-152	P288-05	DF-503	PTE4S5		2TM-S5	IF Decoupling
C8A	200		T17-103	SI200	D6-201	5W5T2	GP2K-200	19C30	Diode RF Filter
B	5000			BPD-005	DD-502	PTE6D5	811-005	29C1	Audio Coupling
C	5000			BPD-005	DD-502	PTE6D5	811-005	29C1	AF Amp. Screen
D	100			SI100	D6-101	5W5T1	GPIK-100	19C11	AF Amp. Plate
E	5000			BPD-005	DD-502	PTE6D5	811-005	29C1	Audio Coupling
C9	.005	600	T16-153	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate
C10	.05	400	T16-197	P488-05	DF-503	PTE4S5		72P51	Line Isolation
C11	.05	400	T16-197	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	T24-188	Q13-137	AG-63-Z	BSK-70-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach to R1A per instructions

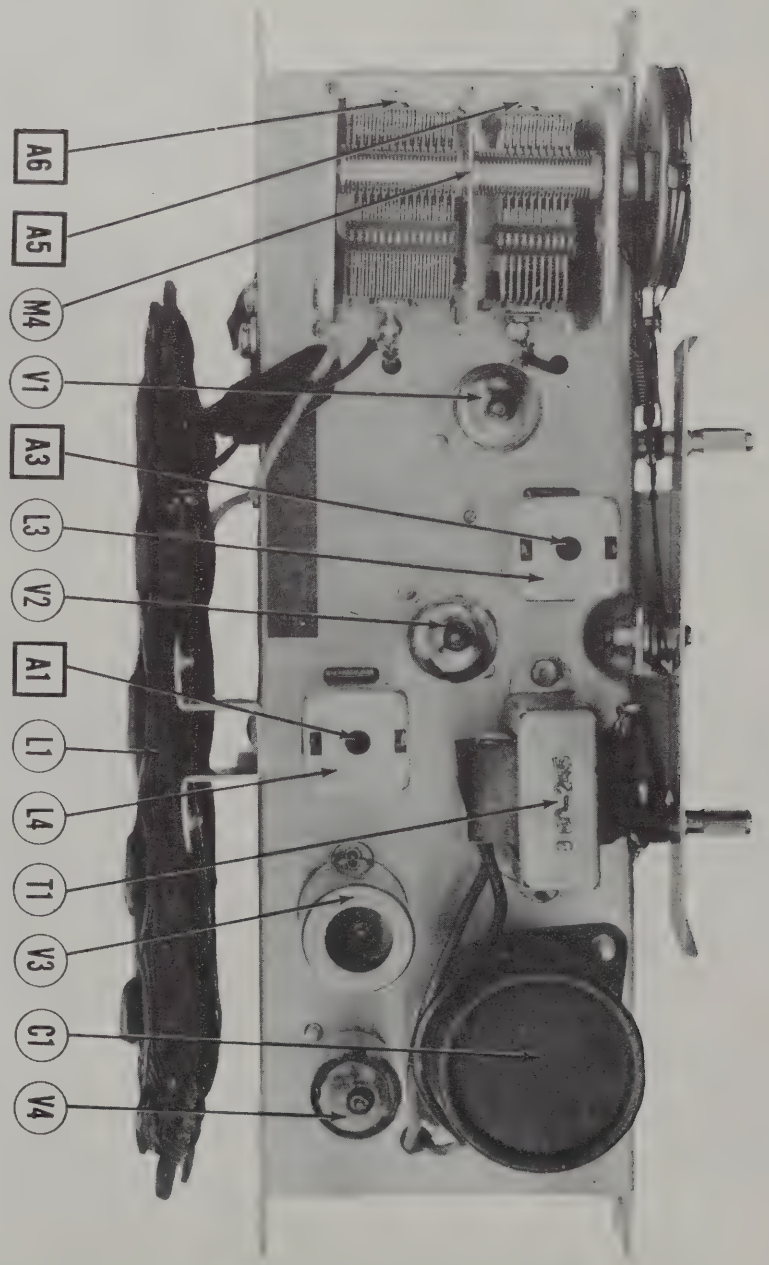
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½	T60-727	BTS-100K	Osc. Grid
R3	10KΩ	½	T60-760	BTS-10K	Osc. Anode
R4	10 Meg.	½	T60-728	BTS-10 Meg.	IF Grid
R5	220Ω	½	T60-753	BTS-220	Decoupling
R6	2.2 Meg.	½	T60-726	BTS-2.2 Meg.	AVC Network
R7	47KΩ	1	T60-730	BTA-47K	Diode Filter
R8	10 Meg.	½	T60-728	BTS-10 Meg.	AF Grid
R9	4.7 Meg.	½	T60-669	BTS-4.7 Meg.	AF Screen
R10	1 Meg.	½	T60-668	BTS-1 Meg.	AF Plate
R11	2.2 Meg.	½	T60-726	BTS-2.2 Meg.	Output Grid
R12	160Ω	3	T60-725		Surge Limiter-Wire Wound
R13	1000Ω	½	T60-675	BTS-1000	Filter
R14	2000Ω	10	T60-757	1 3/4A-2000	Filament Dropping-Wire Wound
R15	1200Ω	½	T60-756	BTS-1200	Filament String
R16	470Ω	½	T60-770	BTS-470	Filament String
R17	680Ω	½	T60-708	BTS-680	Filament String

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	10000Ω	4Ω	450Ω	.5Ω	T80-245	A-3329	A-2932 ①	RO-16 ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA SILVERTONE PART No.	VIKING PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				② Use universal mounting bracket provided.
SP1	PM	4Ω	T79-381	46J6 ③	46A07 ②	③ Fabricate new mounting bracket.
	CONE DIA.	V. C. DIA.				
SP2	4 x 6	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA MEISSNER PART No.
L1	Loop Ant.	.6Ω		T82-67	
L2	Osc. Coil	3.1Ω	7.2Ω	T10-554	14-1074
L3	1st IF	20Ω	20Ω	T10-508	16-6668
L4	2nd IF	20Ω	20Ω	T10-508	16-6669

SELENIUM RECTIFIER

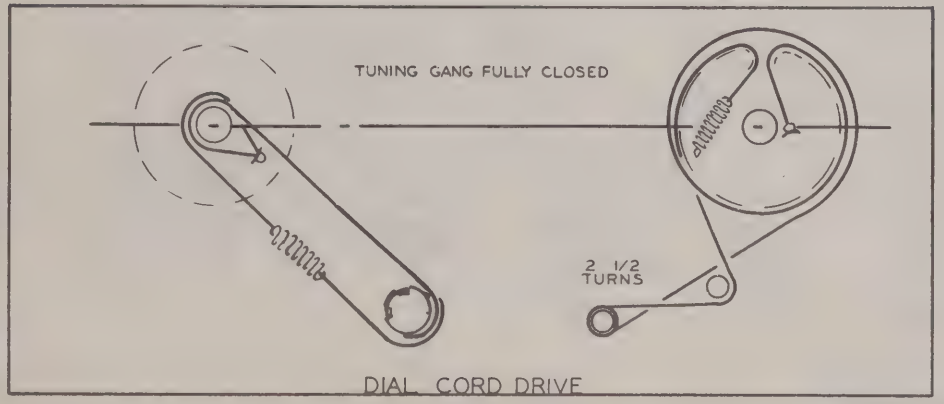
ITEM No.	RATING CURRENT	REPLACEMENT DATA SILVERTONE PART No.	SYLVANIA PART No.	SELETRON PART No.	NOTES
M1	.060ADC	T83-642	NB-5	8J1	

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	7.5V "A" 90V "B"	6407			753			F6A60	

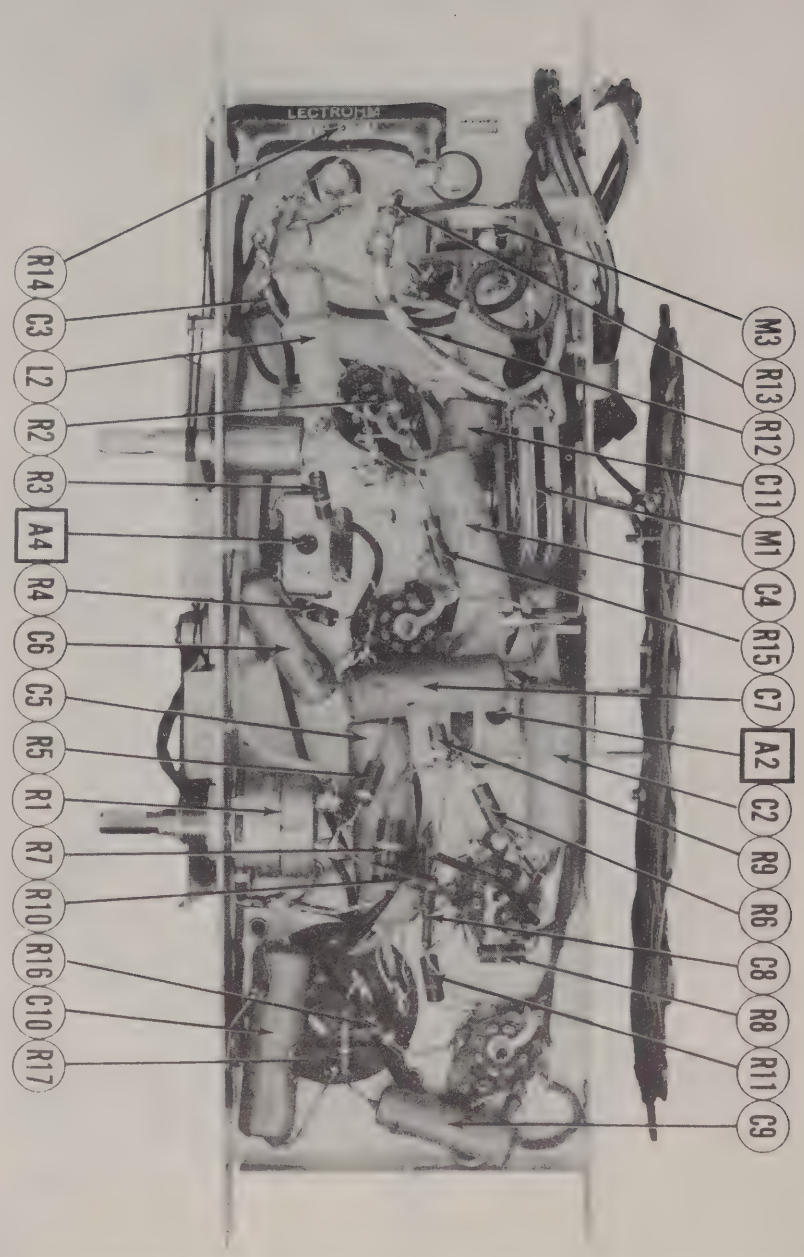
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Switch	T69-186	AC/DC-Battery
M4	2 Gang Var. Cap.	T19-210	(32-525MMF, 39-249MMF)
	Dial Pointer	T58-80	
	Cabinet	T42-467	
	Knob	T52-308	

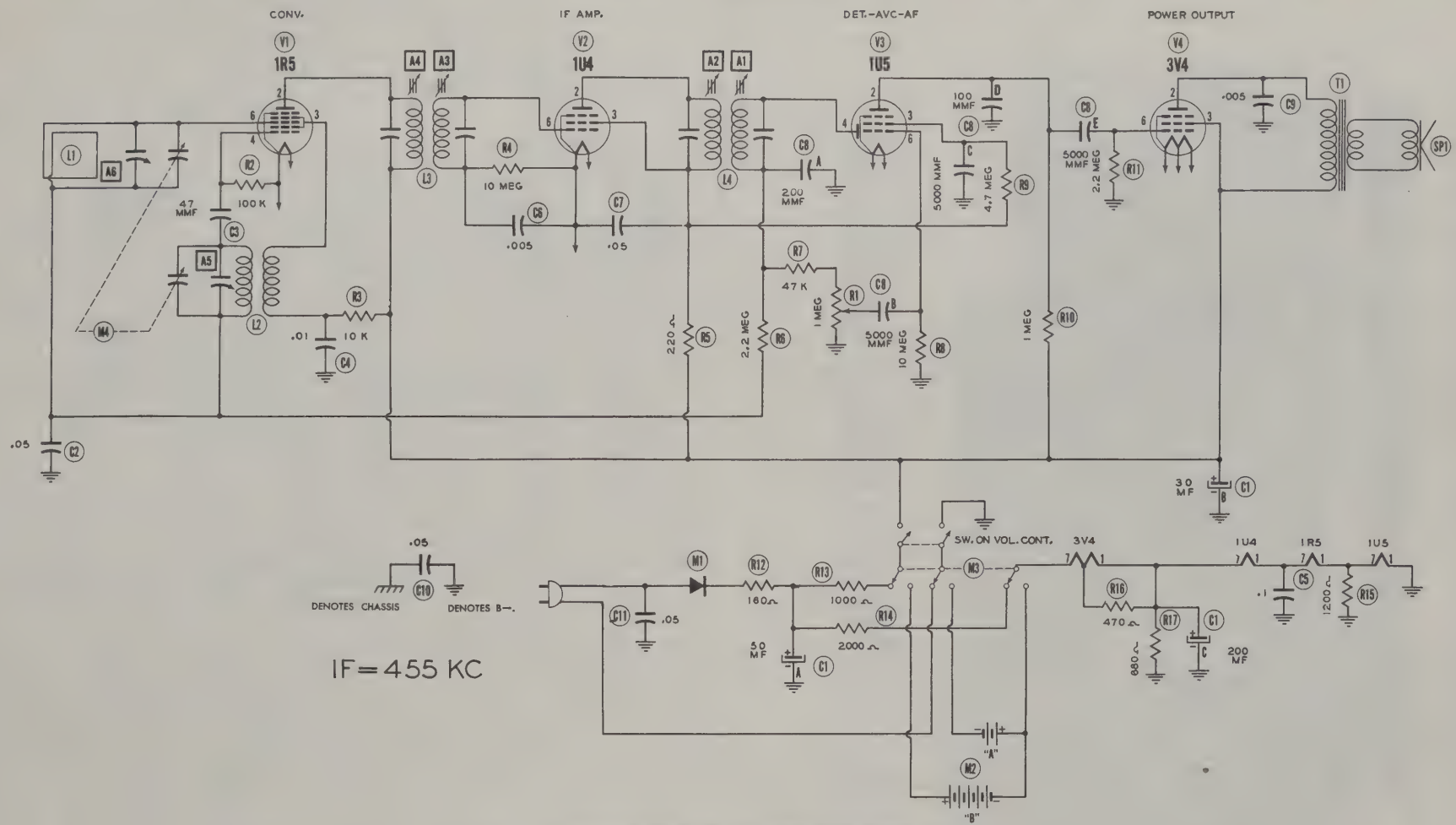


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 220



POWER SWITCH MUST BE "ON" FOR B+ RESISTANCE MEASUREMENTS.
V & R TAKEN IN AC/DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	1.4VDC	85VDC	65VDC	§-8.4VDC	1.4VDC	0V.	2.6VDC
V 2	1U4	2.6VDC	85VDC	85VDC	2.6VDC	2.6VDC	.1VDC	4VDC
V 3	1U5	0V.	10VDC	5VDC	-.1VDC	0V.	0V.	1.4VDC
V 4	3V4	4VDC	82VDC	85VDC	0V.	5.4VDC	0V.	6.8VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†1.1KΩ	†1KΩ	100KΩ	*	3.3 Meg.	*
V 2	1U4	*	†1.4KΩ	†1.4KΩ	*	*	10 Meg.	*
V 3	1U5	*	†1 Meg.	†4.7 Meg.	1 Meg.	3.3Meg.	10 Meg.	*
V 4	3V4	*	†1.6KΩ	†1.1KΩ	Inf.	*	2.2 Meg.	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

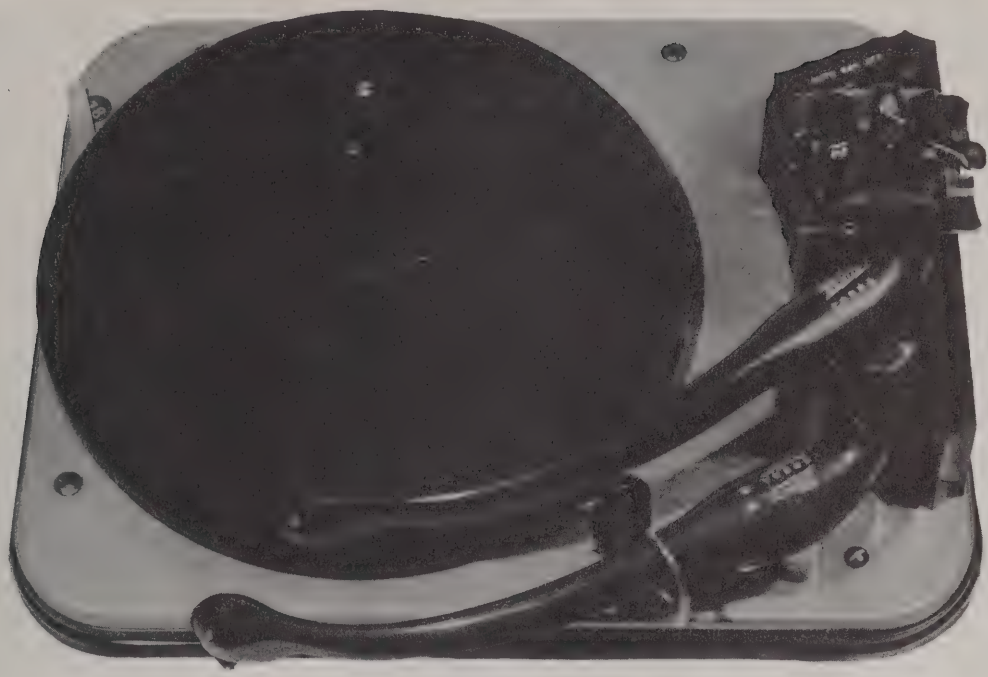

Figure 1

GENERAL INFORMATION

The Zenith Models S14012 and S14014 are designed to play 12 ten-inch or 10 twelve-inch standard 78 RPM records automatically. The last record is repeated until the changer is turned off. Provision is made to play the new fine-groove 33-1/3 RPM records manually.

The cobra radionic pickup used with this changer, instead of generating power, controls power supplied by the oscillator section of the 7F7 phono pre-amp. A coil located in the pickup cartridge is part of the tuned circuit of this oscillator. A stainless-steel vane, part of the stylus assembly, moves in front of this coil in response to the modulation on the record, and varies the Q of the coil. This, in turn, causes changes in the amplitude of oscillation. These changes are detected and amplified in the pre-amp. and passed on to the audio amplifier.

The Oscillator frequency used is approximately 2.5 mc.

Mechanically, the changers are alike. There are slight electrical differences. Model S14012 receives the solenoid energizing voltage from the receiver proper while the S14014 supplies its own energizing voltage from a separate winding on the motor.

Manufactured by:

Zenith Radio Corporation
6001 Dickens Avenue
Chicago 39, Illinois

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ZENITH MODELS
S14012, S14014

ZENITH MODELS
S14012, S14014

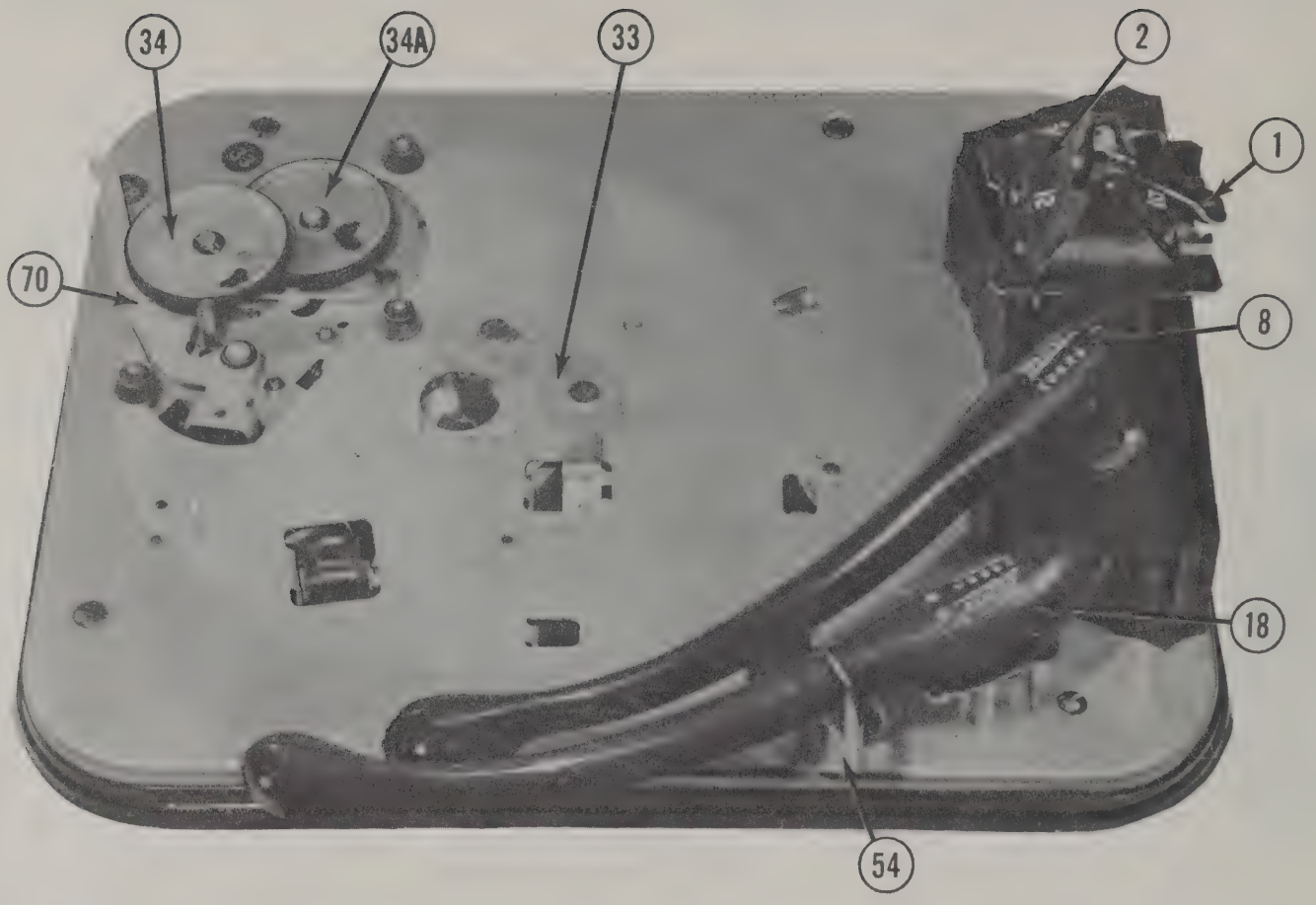


Figure 2

AUTOMATIC OPERATION FOR
78 RPM RECORDS ONLY

1. Set the record support plate (6) for the size records to be played. This may be done by rotating the plate clockwise for 12-inch setting and counter-clockwise for 10-inch set-down.

2. Raise the pressure arm (1).

3. Place a stack of records on the spindle so that the records are supported by the record support plate (6) and the shoulder of the record spindle (7).

4. Lower the pressure arm to the records.

5. Place the speed change lever (70) to the position marked (78) in the Red Circle.

6. Set the three-position slide switch (24) to the "Auto." position and press the "Record Change" button on the radio control panel.

The changer will now play the entire stack of records, repeating the last record until turned off.

7. A record may be rejected at any time, while playing, by pressing the "Record Change" button on the radio panel.

MANUAL OPERATION

To play the 33-1/3 RPM Long-Play Records:

1. Turn the record plate (6) clockwise to the 12-inch setting.

2. Raise the pressure arm (1).

3. Place a 33-1/3 RPM record on the turntable.

4. Move the speed change lever (70) to the green circle marked 33.

5. Set the 3-position switch (24) to "Man." position.

6. Raise the long-play arm (18) from its rest and place in the starting groove of the record.

7. On completion of the record, place the tone arm on its rest, move the switch to the "Off" position, and remove the record from the turntable.

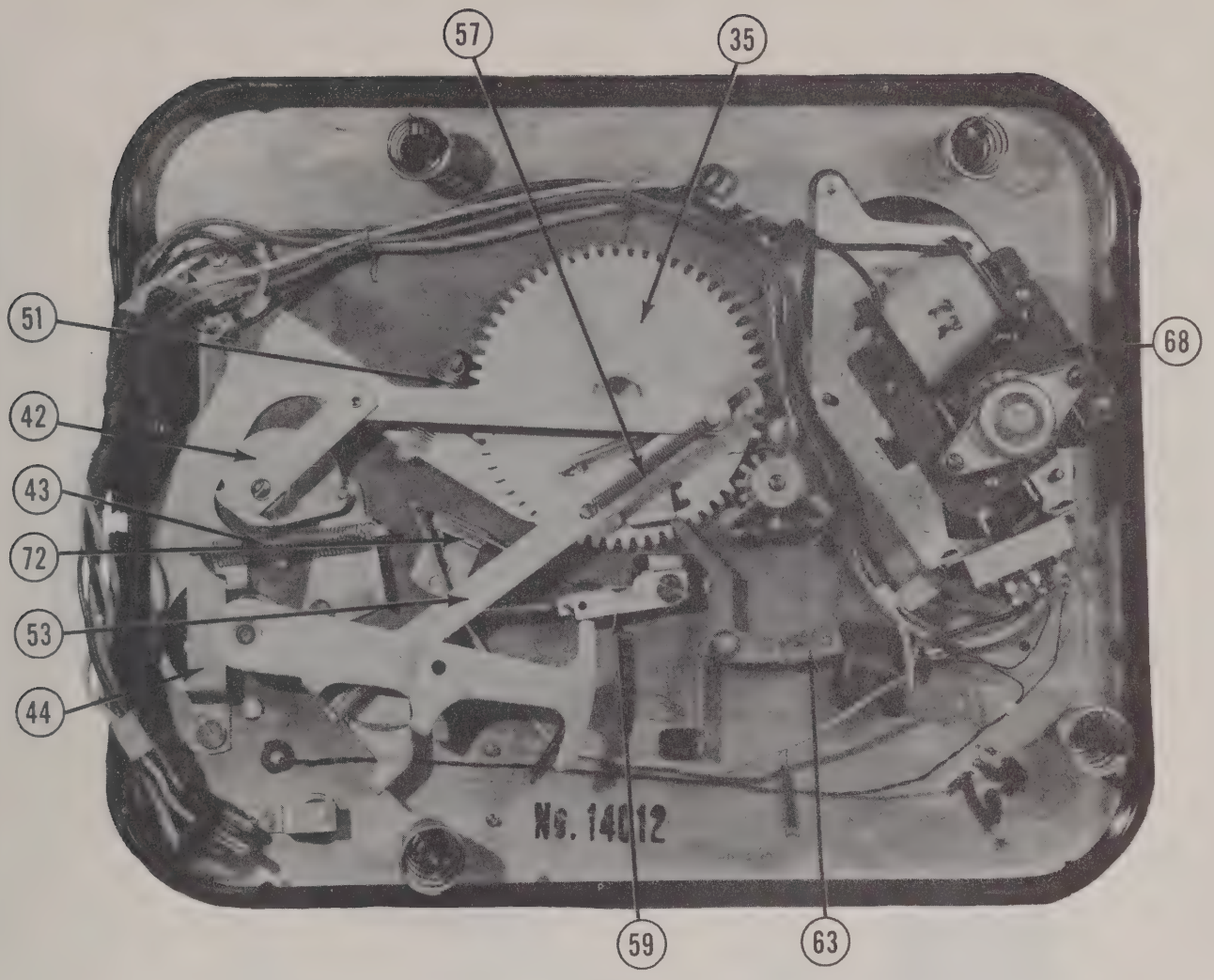


Figure 3

All odd-sized, warped and home recordings should be played manually.

1. Be sure the record shelf is in the 12-inch position.

2. Raise the pressure arm (1).

3. Place the record to be played on the turntable.

4. Move the speed change lever (70) to the red circle 78.

5. Set the 3-position switch (24) to "Man." position.

6. Place the tone arm (8) in the starting groove on the record.

7. On completing the records, place the tone arm on the rest, move the switch to the "Off" position, and remove the record from the turntable.

THE CHANGE CYCLE

Closing the contacts of the trip switch (72) allows current to flow through the solenoid. The magnetic field of the energized solenoid attracts the trip pawl (63) which releases the gear pawl tooth (62) and allows it to engage the rotating turntable gear. This action starts the clutch gear (35) to turn. A stud on the clutch gear (30) engages the tone arm lift lever (36) which, in turn, engages the tone arm stud (16), raising the tone arm. The tone arm lift lever (36) also applies the tone arm brake (44), which prevents coasting and erratic landing of the needle. The clutch gear (35) moves the tone arm actuating lever (45) and laterally swings the tone arm off the turntable. During the lateral swing of the tone arm, the record ejector link and arm assembly (56) operates the record ejector plate (3), and when the tone arm moves to its maximum outward position, the record ejector plate (3) ejects the record and allows it to drop to the turntable. The clutch gear (35) then moves the tone arm actuating lever (53), which swings the tone arm over the starting groove of the record. The tone arm swings one inch nearer the spindle with ten-inch records than it does with twelve-inch records. This difference in inward swing is controlled by the discriminator lever assembly (38). When the record size selector shelf is turned to the 10- or 12-inch position, its shaft (4) moves the discriminator cam (42) and sets the discriminator lever assembly

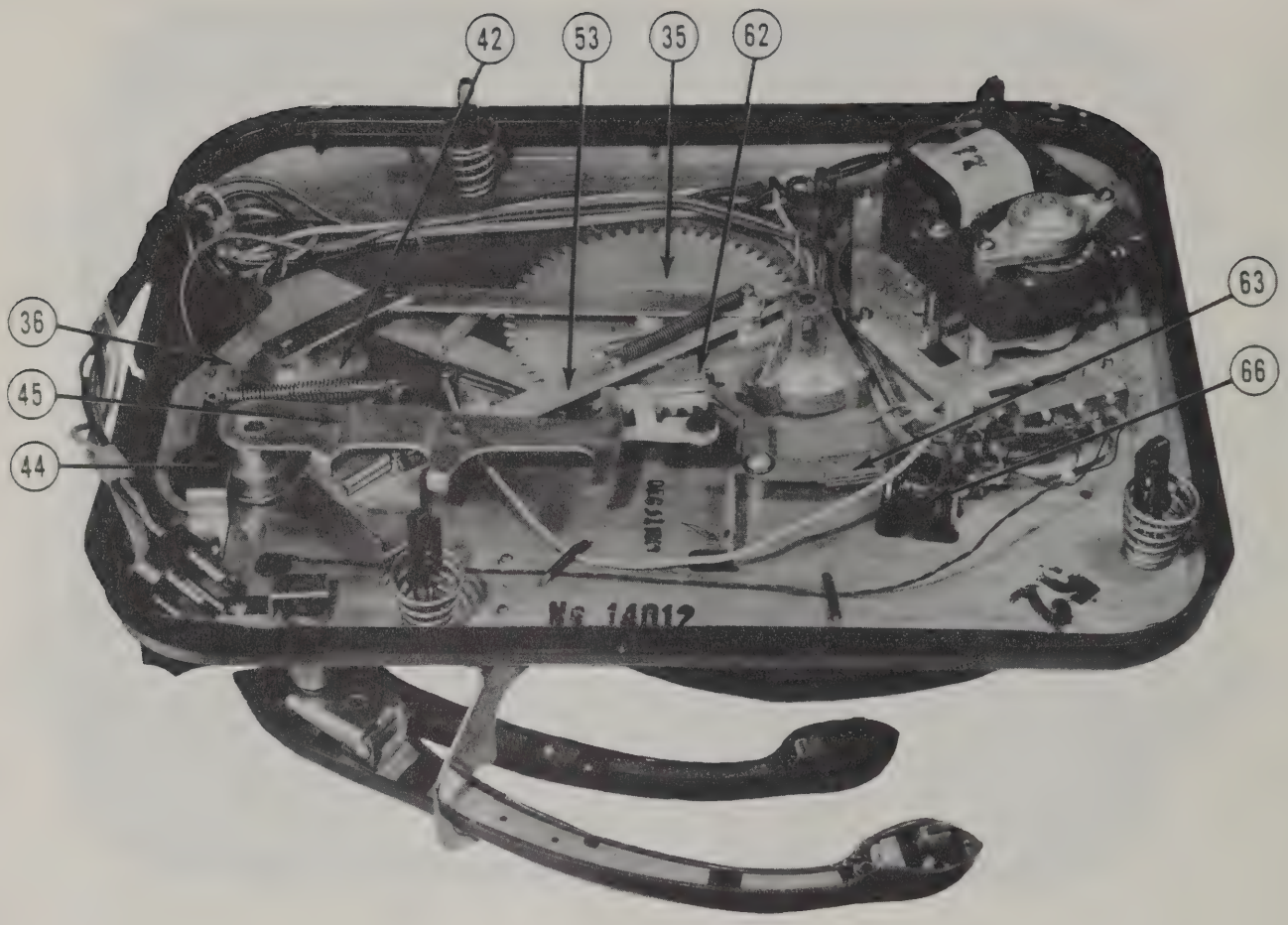


Figure 4

(38) for the correct inward swing of the tone arm. After the tone arm swings over the starting groove of the record, the tone arm lift lever (36) lowers it and releases the brake (44). As the clutch gear (35) completes the revolution, the gear pawl tooth (62) hits the trip pawl (63) and the action removes the gear pawl tooth from the path of the turntable gear, causing the clutch gear (35) to stop and complete the cycle.

The velocity trip depends on the ratio of oscillations of the trip switch contact to the rate of movement of the tone arm. As the record is played, the tone arm lever (45) moves slowly inward. The oscillating lever (59) comes in contact with the ratchet on the tone arm lever and then moves out before the ratchet can drag the oscillating lever and close the trip switch (72) contacts. When the record is completed and the needle enters the oscillating groove, the inward speed of the tone arm increases. This makes it impossible for the oscillating lever (59) to move out of the ratchet in time and, as a result, it is dragged inward, closing the trip switch contacts and starting the next cycle.

RECORD CHANGER MOUNTING CLIPS

This record changer uses new-type pivot clips to mount the changer in the cabinet. The changer is released by applying an upward pressure to the slotted ends of the clips until the clips pivot to a vertical position. When the changer is installed, the clips are pivoted back to the horizontal, or holding, position.

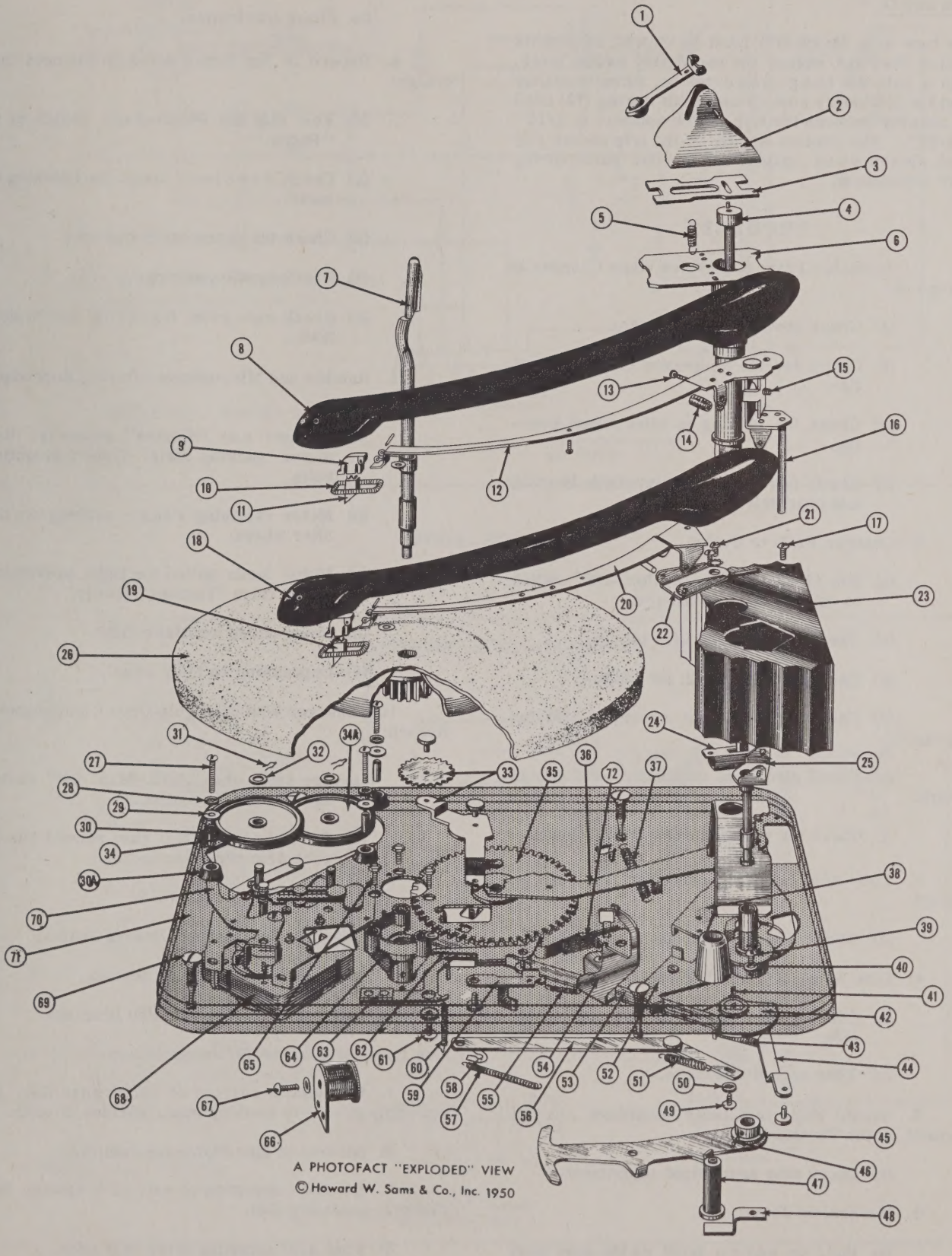
ADJUSTMENTS

Set-Down Point -

The tone arm set-down point may be adjusted by means of the set-down adjustment screw (13). Clockwise rotation of the screw moves the tone arm in, while counterclockwise rotation moves it out.

Tone Arm Height -

The tone arm height adjustment determines the vertical rise of the tone arm. If the tone arm does not raise sufficiently, the record changer will not play a full load of 12-inch records. If, on the other hand, the tone arm is raised too high, it may hit the records on the record shelf. Set the tone arm height adjustment screw (15) so that the needle clears 12 unwarped ten-inch records on the turntable. The tone



A PHOTOFACT "EXPLODED" VIEW

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arm housing must not hit the underside of the records on the record shelf when the changer is cycled after adjustment.

Trip Switch -

The tone arm lever (45) must be moved so that its ratchet does not engage the oscillating switch lever. With a pair of long-nose pliers, simultaneously bend the stationary contact and guide spring (72) until the spacing between the trip switch contacts is 1/16" to 3/32". The contact spring of the trip switch (72) must always rest against the heavier guide spring after adjustment.

TROUBLES

1. Turntable Fails to Revolve When Changer is Turned on:

   (a) Check power supply to motor.

   (b) Check for oil or grease on idler wheel tire.

   (c) Check for binding in idler wheel bearing.

   (d) Check for binding in turntable bearing and gear drive assembly.

2. Changer Fails to Cycle:

   (a) See that the "Auto.-Man.-Off" switch is set to "Auto." position.

   (b) Check trip pawl (63) for binding.

   (c) Check gear pawl (62) for binding.

   (d) Check clutch gear assembly (35) for binding.

   (e) Check electrical continuity of solenoid circuit.

   (f) Check the solenoid energizing voltage.

3. Tone Arm Sets Down too Far in or out on Record:

   (a) Check tone arm set-down adjustment.

4. Tone Arm Set-Down Position Varies:

   (a) Check tone arm brake (44) and spring (43).

   (b) Tone arm pivots loose.

5. Needle Fails to Clear Maximum Load of Records on the Turntable:

   (a) Check tone arm height adjustment.

6. Mechanism Jams:

   (a) Burr or sharp point on the gear pawl tooth (62). Smooth out with a small file.

7. Squeaks or Noises During Playing of Records:

   (a) Friction between the records on the turntable and the spindle. A thin coat of wax applied to the spindle will remedy this condition.

   (b) Check lubrication.

8. Record Is Not Heard Although Changer Operates:

   (a) See that the Phono-Radio switch is in "Phono."

   (b) Check receiver audio by listening to radio.

   (c) Check the phono oscillator tube.

   (d) Check needle cartridge.

   (e) Check tone arm housing for broken leads.

9. Rumble and Microphonics During Reproduction:

   (a) Changer not "floated" properly. Remove packing strip. Loosen mounting bolts.

   (b) Motor retaining rings rubbing on the idler wheel.

   (c) Motor leads pulled too tight, preventing motor from "floating" freely.

   (d) Noisy phono oscillator tube.

   (e) Impression on idler wheel.

10. Changer Will not Cycle Upon Completion of Record:

   (a) See that the "Auto.-Man.-Off" switch is in "Auto." position.

   (b) Be certain that the record has an eccentric center groove.

LUBRICATION

Use Light Machine Oil on the Following Points:

1. Idler wheel (34 and 34A) bearing.

2. Upper and lower motor (68) bearings.

Use Lubriplate on the Following Points:

1. Underneath surface of clutch gear (35). Do not apply grease to teeth or upper surface of gear.

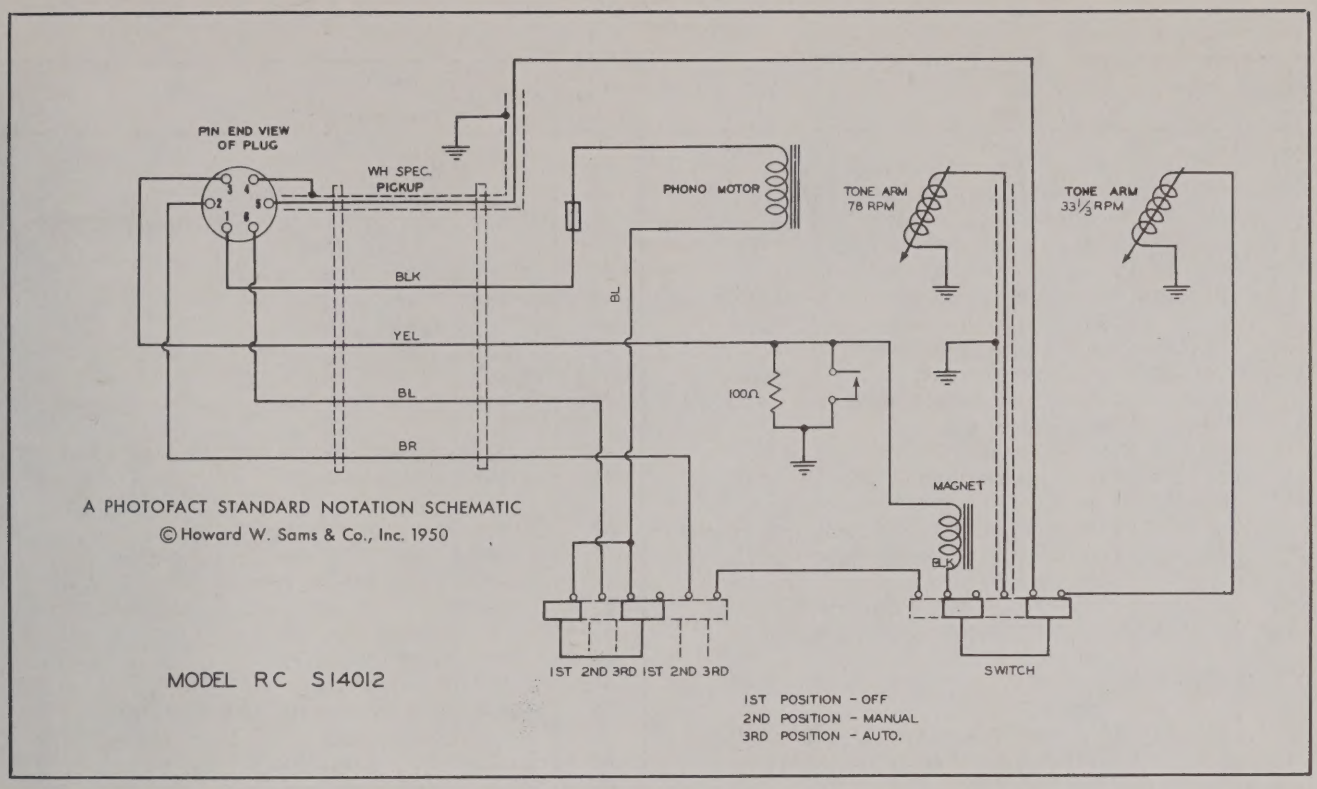
2. Surface of discriminating cam (42).

3. Riveted connection of record ejector link and arm assembly (56).

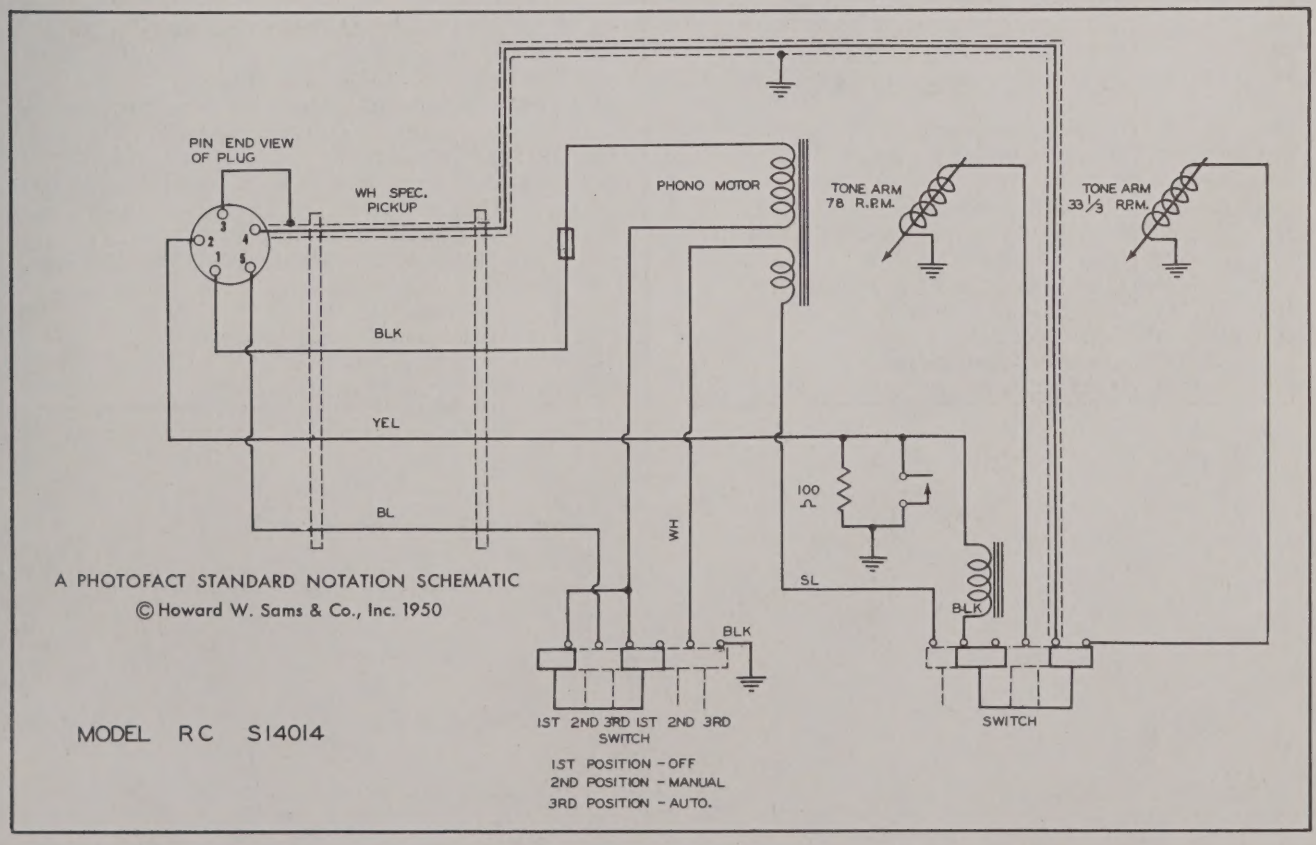
4. Tone arm actuating lever (53) slide.

5. Hub of tone arm lever (45).

6. Lift section of tone arm lift lever (36).



MODEL RC 14012



MODEL RC 14014

PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	148-97	Record Pressure Arm	39		Screw
2	S14512	Pressure Arm Mounting Assembly	40		Internal Lock Washer
3	148-96	Record Ejector Plate	41	73-112	No. 8-32 x 1/2" Slab Head Set Screw - Cup Point
4	S14499	Record Ejector Cam Shaft			
5	80-618	Pressure Arm Spring	42	128-45	Discriminator Cam
6	S145-10	Record Support Plate and Cam Shaft Housing	43	80-614	Brake Spring
			44	117-144	Brake Lever
7	S14496	Record Spindle Assembly	45	S14495	Tone Arm Lever Assembly
8	148-83	Tone Arm Housing	46	73-99	No. 8-32 x 1/4" Slab Head Set Screw
	S14516	Cobra Tone Arm Assembly - Complete	47	76-538	Pivot Bearing Shaft for Long-Play Arm
9	78-561	Cartridge Socket			
10	80-605	Socket Tension Spring	48	12-1548	Support Bracket for Bearing Shaft (47)
11	S11473	Cartridge and Needle Assembly	49	69-141	No. 5-40 x 1/4" R. H. M. S. - Steel N. P.
12	S14513	Tone Arm and Shaft Assembly			
13	80609	Tone Arm Set-Down Adjustment Screw	50	93-125	No. 6 Int. Lock Washer
14	80-619	Tone Arm Set-Down Adjustment Spring	51	80-616	Tone Arm Link Spring (Short)
			52	S14490	Tone Arm Actuating Lever Assembly
15	80-645	Tone Arm Height Adjustment Screw	53	S14490	Tone Arm Actuating Lever (Part of Assembly 52)
16	S14514	Tone Arm Bracket and Lift Stud Assembly			
			54		Tone Arm Rest
17	112-485	No. 4-40 x 1/4" B. H. M. S. - Steel Screw	55	80-582	Pawl Spring
			56	S14494	Record Ejector Link and Arm Assembly
18	S15414	Tone Arm Assembly (33-1/3 RPM)			
19		Cartridge and Needle Assembly	57	80-615	Tone Arm Link Spring (Long)
20		Tone Arm Hinge Plate	58	188-32	Retaining Ring
21		Bracket Mounting Screw	59	S14488	Oscillating Lever and Gear Assembly
22	12-1447	Swivel Bracket - Long Play	60	80-582	Pawl Spring
23	43-162	Record Ejector Housing	61	69-184	No. 8-32 x 1/4" R. H. M. S. - Steel Cad.
24	85-372	Three-Position Slide Switch			
25		Hinge Plate Assembly		93-53	1/64" x 11/64" x 3/8" Steel Washer N. P.
26	S15411	Turntable Assembly			
27	69-11	Motor Mounting Screw	62		Cam Gear Pawl (Part of Item 35)
28	93-125	#6 Int. Shakeproof Lockwasher	63	60-18	Trip Pawl
29	93-35	Flat Washer .032 x .144 x 3/8" Steel Washer	64	43-160	Turntable Gear Housing
			65	114-295	Mounting Screw for Gear Housing (Hex Head) No. 8-32 x 5/16"
30	94-661	Motor Mounting Spacer			
30A	125-61	Motor Mounting Grommet	66	S13913	Solenoid
31	93-678	Hairpin Clip	67	69-43	No. 8-32 x 3/8" R. H. M. S. - Steel N. P.
32	80-694	Idler Wheel Washer			
33	S14488	Oscillating Lever and Gear Assembly	68	141-122	Motor Assembly AC 110 V. 60 Cycle
34	S15383	Idler Wheel for 78 RPM		141-123	Motor Assembly AC 110 V. 60 Cycle (S-14014 only)
34A	S15382	Idler Wheel for 33-1/3 RPM			
35	S14487	Clutch Gear Assembly	69		Mounting Bolt
36	117-145	Tone Arm Lift Lever	70	117-163	Speed Change Lever
37	80-613	Lift Pin Lever Spring	71		Base Plate
38	S14491	Discriminator Lever Assembly	72	S14493	Trip Switch Assembly